Program Key

A Coatings for Use at High Temperatures
B Hard Coatings and Vapor Deposition Technologies
C Functional Thin Films and Surfaces
D Coatings for Biomedical and Healthcare Applications
E Tribology and Mechanical Behavior of Coatings and Engineered Surfaces
EX Exhibitors Keynote Lecture
F New Horizons in Coatings and Thin Films
G Surface Engineering - Applied Research and Industrial Applications
H Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes
HL Awards Convocation and Honorary Lecture
PL Plenary Lecture
SIT Special Interest Talks
TS Topical Symposia
TS1 Anti- and De-Icing Surface Engineering
TS2 Thin Films on Polymer Substrates: Flexible Electronics and Beyond
TS3 Electrochemical Cells – Hydrogen and Batteries
TS4 Big Data, Machine Learning, Artificial Intelligence and High-Throughput Methods
TS5 Sustainable Surface Solutions, Materials, Processes and Applications
TS6 A Session to Acknowledge the Contributions of Joe Greene to ASED, ICMCTF, AVS, & IUVSTA

PROGRAM NUMBERS: They are listed with the Symposium letter first, the session number second, the Day of the Week, Morning (M) or Afternoon (A) and the presentation slot (e.g., **B1-1-MoM6**).

HELPFUL HINTS:

1. Verify all technical session start times (morning and afternoon).
2. Please note that on Monday, the technical sessions begin at 10:00 am following the 8:00 am Plenary Session. Morning sessions begin at 8:00 am but on some days the starting times may vary.
3. Afternoon sessions start times vary between 1:20 – 2:00 p.m.
4. Break times have been inserted into Tuesday and Wednesday programming and you are encouraged to use your extended lunches and breaks to visit the Exhibit Hall.
5. Invited speakers are allotted 40 minutes and contributed speakers are allotted 20 minutes. Please verify your presentation time, as printed in the program book.
6. Oral Presenters: All technical session rooms are equipped with computers running MS Office, screens, microphones, laser pointers, and projectors, as well as an HDMI connection from podium to projector. PowerPoint is the recommended presentation software—the preferred format is 16:9; you may use 4:3 but there will be black space above and below your presentation on some of the screens. We encourage you to use the system and to test your presentation on our equipment in the Presenter's Preview Room in Sunset 2 prior to your talk. If you are using the conference-provided computer, please load your presentation on to this computer at least five minutes prior to the start of the session or during a session break. In deference to all our presenters, it is important that personal computer/projector compatibility issues be worked out well in advance of your presentation and the projector should be compatible with both PC's and MAC's; however, please bring any necessary adapters/dongles as well as a copy of your presentation on a flash drive as a back-up.
7. Poster Presenters: Please post a small photo of the presenter on the poster sign affixed to your assigned board. Boards will be available for posting materials from 12:00 am until 4:00 pm on Thursday, May 26. Prior to hanging your poster, poster presenters must check in at the Registration desk to show photo identification, as well as your registration badge. These forms of identification must match the name of the poster presenter listed in the ICMCTF program. The sign listing the paper's number, title, and presenting author will aid each presenter in locating your board. The board space provided is approximately four feet by four feet and all posters MUST be posted by 4:00 pm. Any posters not displayed by 4:00 pm will be removed from the Program and be listed as a No Show. All presenters are required to be at their poster during the entire session (5:00 - 7:00 pm), in order to promote discussion and for the author to answer attendee questions. Be forewarned, all poster materials will be discarded if not removed from the boards by 9:00 pm Thursday evening.

Reminder: Please turn off CELL PHONES when you are attending the Technical Sessions

ICMCTF 2022 Program Overview

Room /Time	Golden State Ballroom	Pacific C	Pacific D	Pacific E	Town & Country A	Town & Country B	Town & Country C	Town & Country D
MoPL					PL-MoPL			
MoM		D1-1-MoM	H1-1-MoM	A1-1-MoM	TS5-MoM	F5-1-MoM	B2-1-MoM	B4-1-MoM
MoSIT					SIT1-MoSIT			
MoA		D1-2-MoA	H1-2-MoA	G4-MoA	TS6-1-MoA		B2-2-MoA F5-2-MoA	A1-2-MoA B4-2-MoA
TuM		D2-TuM	H2-1-TuM	A1-3-TuM	TS6-2-TuM	E3-TuM	F2-1-TuM G1-TuM	B4-3-TuM
TuEx					EX-TuM			
TuA	EXHIBITION	TS2-1-TuA	D3-TuA H3-TuA	G3-TuA	TS6-3-TuA	E1-1-TuA	F2-2-TuA	A2-1-TuA B4-4-TuA
TuSIT					SIT2-TuSIT			
WeM		C1-WeM	F4-1-WeM H2-2-WeM	A2-2-WeM		E1-2-WeM	B5-1-WeM B6-1-WeM	
WeSIT					SIT3-WeSIT			
WeA			F1-WeA	F4-2-WeA		E1-3-WeA TS3-WeA	B5-2-WeA	B6-2-WeA C2-1-WeA
WeHL					HL-WeHL			
ThM			C2-2-ThM C3-1-ThM	F4-3-ThM		E2-1-ThM G2-ThM	B1-1-ThM	B8-1-ThM
ThL							FTS1-ThL	
ThA			B3-ThA	TS4-ThA		E2-2-ThA	B1-2-ThA C3-2-ThA	B8-2-ThA
ThP	POSTER SESSIONS							
FrM						TS1-FrM	C4-FrM F3-FrM	

Plenary Lecture
Room Town & Country A - Session PL-MoPL
Plenary Lecture: The Fundamental Physics of Spray Coatings and Surface Impacts: Unit Process Studies of Hypersonic Particle Impacts
Moderator: Samir Aouadi, University of North Texas, USA

8:00am **INVITED: PL-MoPL-1** PLENARY LECTURE: The Fundamental Physics of Spray Coatings and Surface Impacts: Unit Process Studies of Hypersonic Particle Impacts,
Christopher A. Schuh, MIT, USA

8:20am

Monday Morning, May 23, 2022

	Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes **Room Pacific D - Session H1-1-MoM** **Spatially-resolved and In-Situ Characterization of Thin Films and Engineered Surfaces I** **Moderators: Grégory Abadias**, Institut Pprime - CNRS - ENSMA - Université de Poitiers, France, **Xavier Maeder**, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland, **Michael Tkadletz**, Montanuniversität Leoben, Austria	**Coatings for Biomedical and Healthcare Applications** **Room Pacific C - Session D1-1-MoM** **Surface Coatings and Surface Modifications in Biological Environments I** **Moderators:** **Mathew T. Mathew**, University of Illinois College of Medicine at Rockford and Rush University Medical Center, USA, **Phaedra Silva-Bermudez**, Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, Mexico
10:00am	**INVITED: H1-1-MoM-1** In Situ Observations and Measurements of Plastic Deformation, Phase Transformations and Fracture With 4D-STEM, ***Andrew Minor,*** UC Berkeley and LBNL, USA	**D1-1-MoM-1** Corrosion Evaluation of ZrO_2 Coatings Deposited on Biodegradable MgZnCa Alloy for Orthopedic Applications, ***Benjamin Millan,*** *S. Rodil,* UNAM, Mexico*; J. Victoria-Hernandez,* Helmholtz-Zentrum Geesthacht, Germany
10:20am		**D1-1-MoM-2** Novel Duplex Treatments Prepared by HiPIMS and HVOF/Solgel on Biodegradable Magnesium Alloy for Biomedical Applications, ***Adrián Claver,*** Universidad Pública de Navarra (UPNA), Spain*; I. Fernandez, J. Santiago,* Nano4Energy SL, Spain*; I. Quintana,* Fundación Tekniker, Spain*; L. Mendizabal,* Fundación Tekniker , Spain*; J. García,* Universidad Pública de Navarra (UPNA), Spain
10:40am	**H1-1-MoM-3** Real-Time N_2-Mediated Growth Manipulation of Ultrathin Ag Layers, ***Gregory Abadias,*** Institut PPrime - CNRS - ENSMA - Université de Poitiers, France*; A. Jamnig, D. Babonneau, A. Michel, Y. Robin,* Institut Pprime - CNRS - ENSMA - Université de Poitiers, France*; A. Resta, A. Vlad, A. Coati,* Synchrotron SOLEIL, France*; K. Sarakinos,* University of Helsinki, Finland*; B. Krause,* Karlsruhe Institute of Technology (KIT), Germany	**INVITED: D1-1-MoM-3** Surface Properties Control Immune Response to Implanted Biomaterials, ***Rene Olivares-Navarrete,*** Virginia Commonwealth University, USA
11:00am	**H1-1-MoM-4** Phase Transformation and Solid-State Dewetting of Precious Metal High Entropy Alloy Thin Films on a Sapphire Substrate, ***Xavier Maeder,*** *A. Sharma, P. Schweizer, J. Michler,* Empa - Swiss Federal Laboratories for Materials Science and Technology, Switzerland	
11:20am	**H1-1-MoM-5** Investigation of Silicon Samples by the Emerging Picosecond Ultrasonics, *F. Faese,* ***Julien Michelon****, X. Tridon,* Neta, France	**D1-1-MoM-5** Metal Oxide Thin Films as Osteoinductive Coatings, ***Phaedra Silva-Bermudez****, M. Fernández-Lizárraga, D. Morquecho-Marín,* Unidad de Ingeniería de Tejidos, Terapia Celular y Medicina Regenerativa, Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, Mexico*; B. Millán-Ramos ,* Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México*; J. García-López ,* Unidad de Ingeniería de Tejidos, Terapia Celular y Medicina Regenerativa, Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, Mexico*; S. Rodil,* Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México
11:40am		**D1-1-MoM-6** Synergetic Effect of Porous Ta_2O_5 Surface With Zn/ZnO Core-Shell Nanoparticles on Antimicrobial Activity and Corrosion Resistance, ***Luísa Fialho****, C. Rebelo,* University of Minho, Portugal*; C. Alves,* Instituto Pedro Nunes, Coimbra, Portugal*; J. Castro,* University of Coimbra, Portugal*; P. Sampaio,* University of Minho, Portugal*; S. Carvalho,* University of Coimbra, Portugal

	Coatings for Use at High Temperatures **Room Pacific E - Session A1-1-MoM** **Coatings to Resist High-temperature Oxidation, Corrosion, and Fouling I** **Moderators:** **Shigenari Hayashi**, Hokkaido University, Japan, **Justyna Kulczyk-Malecka**, Manchester Metropolitan Univ., UK	**Hard Coatings and Vapor Deposition Technologies** **Room Town & Country C - Session B2-1-MoM** **CVD Coatings and Technologies I** **Moderator:** **Raphael Boichot**, Grenoble-INP/CNRS, France
10:00am	**INVITED: A1-1-MoM-1** Performance of Innovative High-Temperature Coatings after Exposure in a Pilot Plant Burning Biomass, ***Alina Agüero Bruna,*** Instituto Nacional de Técnica Aeroespacial INTA, Spain; *P. Audigié, S. Rodriguez,* Instituto Nacional de Técnica Aeroespacial (INTA), Spain; *M. Gutiérrez,* Instituto Nacional de Técnica Aeroespacial (INTA), Spain; *M. Benito, A. Bahillo,* CIEMAT, Spain	
10:20am		**B2-1-MoM-2** Diamond Coatings for Cutting Tool Applications, ***Manfred Weigand,*** *M. Woda, W. Puetz, M. Wegh, C. Schiffers, W. Koelker, O. Lemmer,* CemeCon AG, Germany
10:40am	**A1-1-MoM-3** Surface Coatings for Improved Corrosion Resistance of Steels in Heavy Liquid Metal Coolants, *J. Kulczyk-Malecka,* Manchester Metropolitan University, UK; *N. Barron, S. Ortner,* National Nuclear Laboratory Limited, UK; ***Peter Kelly,*** Manchester Metropolitan University, UK	**INVITED: B2-1-MoM-3** Deposition of Hard Carbon Films by High Power Pulse Magnetron Sputtering (Virtual Presentation), ***Takayuki Ohta,*** Meijo University, Japan; *A. Oda,* Chiba institute of Technology, Japan; *H. Kousaka,* Gifu University, Japan
11:00am	**A1-1-MoM-4** Improving the Intermediate Temperature Oxidation Resistance of Refractory Metals and Mo-Based Systems, ***Katharina Beck,*** *A. Ulrich,* DECHEMA-Research Institute, Germany; *F. Hinrichs, M. Heilmaier,* Karlsruhe Institut of Technology, Germany; *M. Galetz,* DECHEMA-Research Institute, Germany	
11:20am	**A1-1-MoM-5** Arc-Evaporated $Ti_{1-x}Al_xN$ Coatings in Hot-Corrosion Settings, ***Oliver Ernst Hudak,*** *A. Scheiber,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien, Austria; *L. Shang, O. Hunold, M. Arndt,* Oerlikon Balzers, Oerlikon Surface Solutions AG, 9496 Balzers, Liechtenstein; *S. Kolozsvari,* Plansee Composite Materials GmbH, D-86983 Lechbruck am See, Germany; *H. Riedl,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien , Austria	**B2-1-MoM-5** Ti_3SiC_2-SiC Multilayer Thin Films Deposited by High Temperature Reactive Chemical Vapor Deposition, ***Jorge Sánchez Espinoza,*** *F. Trabelsi, E. Blanquet, F. Mercier,* SIMAP, Grenoble-INP, CNRS, France
11:40am	**A1-1-MoM-6** High Temperature Oxidation Behavior of Hafnium Aluminum Diboride Thin Films, ***Samyukta Shrivastav,*** *D. Yun, C. Romnes, K. Canova, J. Abelson, J. Krogstad,* University of Illinois at Urbana Champaign, USA	**B2-1-MoM-6** Chemical Vapor Deposition of W(C,N): Process Parameter – Microstructure – Mechanical and Tribological Property Relationships, ***Katalin Bőőr,*** Uppsala University, Angstrom Laboratory, Sweden; *L. von Fieandt, E. Lindahl,* Sandvik Coromant, Sweden; *M. Fallqvist,* Karlstad University, Sweden; *O. Bäcke,* Chalmers University of Technology, Sweden; *R. Lindblad,* Uppsala University, Sweden; *M. Halvarsson,* Chalmers University of Technology, Sweden; *M. Boman,* Uppsala University, Sweden

Monday Morning, May 23, 2022

	Hard Coatings and Vapor Deposition Technologies **Room Town & Country D - Session B4-1-MoM** **Properties and Characterization of Hard Coatings and Surfaces I** **Moderators: Naureen Ghafoor**, Linköping University, Sweden, **Johan Nyman**, Linköping Univ., IFM, Thin Film Physics Div., Sweden, **Justinas Palisaitis**, Linköping Univ., IFM, Thin Film Physics Div., Sweden	**New Horizons in Coatings and Thin Films** **Room Town & Country B - Session F5-1-MoM** **In-Silico Design of Novel Materials by Quantum Mechanics and Classical Methods I** **Moderators:** **David Holec**, Montanuniversität Leoben, Austria, **Ivan G. Petrov**, University of Illinois at Urbana-Champaign, USA
10:00am	**INVITED: B4-1-MoM-1** Cathodic Arc Deposition of Chromium Based Coatings, ***Johan Nyman****, H. Högberg,* Linköping University, IFM, Thin Film Physics Division, Sweden	**INVITED: F5-1-MoM-1** Competition between Plasticity and Brittleness in Refractory Ceramics, ***Davide Sangiovanni****, F. Tasnadi, I. Abrikosov,* Linköping University, Sweden
10:20am		
10:40am	**B4-1-MoM-3** Grain Boundary Segregation Engineering in AlCrN Hard Coatings by CrN precipitation, ***Tobias Ziegelwanger****, N. Jaeger, C. Mitterer, R. Daniel, J. Keckes, M. Meindlhumer,* Montanuniversität Leoben, Austria	**F5-1-MoM-3** Intriguing Deformation Mechanisms in Nanolayered Ceramics, ***Nikola Koutná****,* TU Wien, Austria*; L. Löfler,* RWTH Aachen University, Germany*; D. Holec,* Montanuniversitat Leoben, Austria*; Z. Chen, Z. Zhang,* Austrian Academy of Sciences, Austria*; L. Hultman,* Linkoping University, Sweden*; P. Mayrhofer,* TU Wien, Austria*; D. Sangiovanni,* Linkoping University, Sweden
11:00am	**B4-1-MoM-4** Influence of Deposition Pressure and Gas Mixture on the Microstructure, Phase Composition and Thermal Stability of Arc Evaporated TiSiN Coatings, ***Yvonne Moritz***[1]*, C. Saringer,* Christian Doppler Laboratory for Advanced Coated Cutting Tools at the Department of Materials Science, Montanuniversität Leoben, Austria*; M. Tkadletz,* Department of Materials Science, Montanuniversität Leoben, Austria*; C. Czettl, M. Pohler,* Ceratizit Austria GmbH, Austria*; N. Schalk,* Christian Doppler Laboratory for Advanced Coated Cutting Tools at the Department of Materials Science, Montanuniversität Leoben, Austria	**F5-1-MoM-4** In Silico Testing of AlN/TiN Superlattices Using Molecular Dynamics, ***Lukas Löfler,*** Montanuniversität Leoben, Austria*; N. Koutna,* TU Wien, Institute of Materials Science and Technology, Austria*; Z. Chen,* Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria*; G. Nayak,* Montanuniversität Leoben, Austria*; O. Renk,* Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria*; L. Hultman,* Linköping University, Sweden*; Z. Zhang,* Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria*; D. Sangiovanni,* Linköping University, Sweden*; P. Mayrhofer,* TU Wien, Institute of Materials Science and Technology, Austria*; D. Holec,* Montanuniversität Leoben, Austria
11:20am	**B4-1-MoM-5** Grain Boundary Segregation Alters the Fracture Mechanism of an AlCrN Thin Film, ***Michael Meindlhumer****, T. Ziegelwanger,* Montanuniversität Leoben, Austria*; J. Zalesak,* Austrian Academy of Sciences, Leoben, Austria*; M. Hans,* RWTH Aachen University, Germany*; L. Löfler, S. Spor, N. Jäger,* Montanuniversität Leoben, Austria*; A. Stark,* Helmholtz-Zentrum Geesthacht, Centre for Materials and Coastal Research, Geesthacht, Germany*; H. Hruby,* voestalpine eifeler Vacotec GmbH, Düsseldorf, Germany*; D. Holec,* Montanuniversität Leoben, Austria*; J. Schneider,* RWTH Aachen University, Germany*; C. Mitterer, R. Daniel, J. Keckes,* Montanuniversität Leoben, Austria	**INVITED: F5-1-MoM-5** Advancing Computational Methods for Heterogeneous Material Systems, ***Susan Sinnott****,* Penn State University, USA
11:40am		
12:00pm		**F5-1-MoM-7** On the Interplay between Stacking and Stability of Transition-Metal Diborides, ***David Holec****, T. Leiner,* Montanuniversität Leoben, Austria*; N. Koutná, P. Mayrhofer,* TU Wien, Austria

[1] **Graduate Student Award Finalist**

Topical Symposia
Room Town & Country A - Session TS5-MoM
Sustainable Surface Solutions, Materials,Processes and Applications
Moderators: Jyh-Wei Lee, Ming Chi University of Technology, Taiwan , **Noora Manninen**, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein

10:00am	**INVITED: TS5-MoM-1** Innovative Processes for High Performance Materials for Low Carbon Energy in a Circular Economy Approach*,* ***Frederic Schuster****,* CEA, France	
10:20am		
10:40am	**TS5-MoM-3** Pathways for Sustainable Surface Solutions*, J. Vetter, J. Becker, C. Sholz,* Oerlikon Balzers Coating Germany GmbH, Germany*; F. Rovere,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein*; A. Barth,* Oerlikon Metco AG, Switzerland*; M. Esselbach,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein ***Noora Manninen****,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein	
11:00am	**TS5-MoM-4** Selection of Laser Processing Parameters for Cleaning of Aluminum and FRP Sheets*,* ***Bartłomiej Przybyszewski****, R. Kozera, A. Boczkowska, D. Kuczyńska, H. Garbacz, J. Pura,* Warsaw University of Technology, Poland	

Special Interest Talks
Room Town & Country A - Session SIT1-MoSIT
Special Interest Session I
Moderator: Samir Aouadi, University of North Texas, USA

1:00pm **INVITED: SIT1-MoSIT-1** From High Temperature Tribology to Ultrasensitive Biomolecular Detection: The Versatility of Transition Metal Dichalcogenide Thin Films,
Christopher Muratore, Department of Chemical and Materials Engineering, University of Dayton, USA

1:20pm

	Coatings for Biomedical and Healthcare Applications **Room Pacific C - Session D1-2-MoA** **Surface Coatings and Surface Modifications in Biological Environments II** **Moderators:** **Mathew T. Mathew**, University of Illinois College of Medicine at Rockford and Rush University Medical Center, USA, **Phaedra Silva-Bermudez**, Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, Mexico	**Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes** **Room Pacific D - Session H1-2-MoA** **Spatially-resolved and In-Situ Characterization of Thin Films and Engineered Surfaces II** **Moderators: Grégory Abadias**, Institut Pprime - CNRS - ENSMA - Université de Poitiers, France, **Xavier Maeder**, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland, **Michael Tkadletz**, Montanuniversität Leoben, Austria
1:40pm	**INVITED: D1-2-MoA-1** Microstructural and Electrochemical Characterization of 3D Printed Biomedical Implants (Virtual Presentation)*,* ***Mozart Neto****, R. Pourzal,* Rush University Medical Center, USA	**H1-2-MoA-1** Decomposition of CrN Induced by Laser-Assisted Atom Probe Tomography*,* ***Helene Waldl****, M. Schiester,* Montanuniversität Leoben, Austria*; M. Hans,* RWTH Aachen University, Germany*; D. Primetzhofer,* Uppsala University, Sweden*; N. Schalk, M. Tkadletz,* Montanuniversität Leoben, Austria
2:00pm		**H1-2-MoA-2** Watching Matter Move: Observing in-situ Silver Intercalation in Real Time*,* ***Falk Niefind****,* NIST-Gaithersburg, USA*; C. Dong, R. Maniyara, J. Robinson,* Pennsylvania State University, USA*; S. Pookpanratana,* NIST-Gaithersburg, USA
2:20pm	**D1-2-MoA-3** Diamon-like Carbon Coatings with Precise and Localized Silver Doping for High-Performance Biomedical Applications*,* ***Abdul Wasy Zia****,* Northumbria University, UK*; M. Panayiotidis,* The Cyprus Institute of Neurology & Genetics, Nicosia, Cyprus*; M. Birkett,* Northumbria University, UK	**H1-2-MoA-3** In-Situ Study of Plasma Surface Interaction Utilizing a Microplasma in a TEM*,* ***Holger Kersten****, L. Hansen, N. Kohlmann, U. Schuermann, L. Kienle,* Kiel University, Germany
2:40pm	**D1-2-MoA-4** Corrosion Resistance and Biocompatibility Evaluation of TiZrNbTaMo High Entropy Alloy Coatings*, S. Hou,* Ming Chi University of Technology, China*; B. Lou,* Chang Gung University, Taiwan*;* ***Jyh-Wei Lee****,* Ming Chi University of Technology, Taiwan	**H1-2-MoA-4** Detection of Individual Nucleated Dislocation Slip Trace During *in Situ* TEM Tensile Testing by Advanced Image Analysis*,* ***Xiaoqing Li****, A. Minor,* University of California at Berkeley, USA
3:00pm	**D1-2-MoA-5** Corrosion Risk Evaluation of Carbide-Derived Carbon (CDC) Surface Modification for Hip Implants*,* ***Yani Sun****,* University of Illinois at Chicago, USA*; K. Kinnerk,* City Colleges of Chicago, USA*; K. Cheng, M. Mathew,* UIC College of Medicine at Rockford, USA*; M. McNallan,* University of Illinois at Chicago, USA	**H1-2-MoA-5** Effect of Film Thickness and Trace Width on Electrical Conductivity of Stretchable Composite Inks Under Monotonic and Cyclic Tensile Loading*,* ***Qiushi Li****, O. Pierron, A. Antoniou,* Georgia Institute of Technology, USA
3:20pm	**D1-2-MoA-6** Enhancing the Mechanical and Biomedical Properties of Super Hard β-Ti_3Au Intermetallic Thin Films by Doping with Known Antimicrobial and Interstitial Elements*, C. Cherian Lukose ,* ***Martin Birkett****,* Northumbria University, UK*; M. Panagiotidis ,* The Cyprus Institute of Neurology & Genetics, Cyprus	**INVITED: H1-2-MoA-6** Exploring Diffusion and Segregation Phenomena on the Nano Scale by *in Situ* Tem Heating Studies (Virtual Presentation)*,* ***Yolita Eggeler****,* Laboratory for Electron Microscopy, KIT, Germany
3:40pm		
4:00pm		**H1-2-MoA-8** *In-situ* Spectroscopic Ellipsometry Based Real-Time Growth Monitoring of Metal-Oxide Atomic Layer Deposition Processes*,* ***Ufuk Kilic****, S. G. Kilic, M. Hilfiker, A. Mock, D. Sekora,* University of Nebraska-Lincoln, USA*; G. Melendez,* Polytechnic University of Puerto Rico*; N. Ianno, C. Argyropoulos, E. Schubert, M. Schubert,* University of Nebraska-Lincoln, USA

	Surface Engineering - Applied Research and Industrial Applications **Room Pacific E - Session G4-MoA** **Hybrid Systems, Processes and Coatings** **Moderators:** **Satish Dixit**, Plasma Technology Inc., USA, **Sang-Yul Lee**, Korea Aerospace University, Korea (Republic of)	**Topical Symposia** **Room Town & Country A - Session TS6-1-MoA** **A Session to Acknowledge the Contributions of Joe Greene to the ASED, ICMCTF, AVS, and IUVSTA I** **Moderators:** **Michael Stüber**, Karlsruhe Institute of Technology, Germany, **Samir Aouadi**, University of North Texas, USA
1:40pm	**G4-MoA-1** Modelling Layered Materials Systems Using the Einstein-Hilbert Action, ***Frank Papa,*** GP plasma, USA; *T. vom Braucke,* GP plasma, World Formula Apps, Canada; *N. Bierwisch,* Saxonian Institute of Surface Mechanics SIO, Germany; *N. Schwarzer,* Saxonian Institute of Surface Mechanics SIO, World Formula Apps, Germany	**INVITED: TS6-1-MoA-1** Low-Temperature Growth of Epitaxial and Polycrystalline Thin Films Under High-Fluxes of Low-Energy Gas Ions, ***Ivan G. Petrov,*** Linköping University, Sweden, University of Illinois at Urbana-Champaign, National Taiwan University of Science and Technology, Taiwan; *J. Sundgren,* Swedish Association of Engineering Industries, Sweden; *L. Hultman,* Linköping University, Sweden; *J. Greene,* inköping University, Sweden, University of Illinois at Urbana-Champaign, National Taiwan University of Science and Technology, Taiwan
2:00pm	**G4-MoA-2** Control of Phase Transition of VO_2 Films and VO_2-based Terahertz and Infrared Devices, ***Heungsoo Kim,*** Naval Research Laboratory, USA; *D. Lahneman,* National Research Council Fellow , USA; *R. Auyeung, K. Charipar, C. Rohde, A. Pique,* Naval Research Laboratory, USA	
2:20pm	**INVITED: G4-MoA-3** Hybrid HIPIMS and Controlled Pulsed Arc for Deposition of Hard Coatings, ***Jiří Vyskočil,*** *P. Mareš,* HVM Plasma, Czechia; *Z. Hubička, M. Čada,* Institute of Physics CAS, Czechia	**INVITED: TS6-1-MoA-3** Advanced Materials, A Key for the Green and Digital Transformations and for Industrial Competitiveness (Virtual Presentation), ***Jan-Eric Sundgren,*** Swedish Association of Engineering Industries, Sweden
2:40pm		
3:00pm		**INVITED: TS6-1-MoA-5** Industrial Magnetron Sputtering: Interfaces & More, ***Wolf-Dieter Münz,*** Consultant, Austria
3:20pm		
3:40pm		**INVITED: TS6-1-MoA-7** Applying Thin Film Synthesis and Characterization Methods to Improving Photovoltaics, ***Angus Rockett,*** Colorado School of Mines, USA
4:00pm		
4:20pm		**INVITED: TS6-1-MoA-9** May the Interatomic Forces be with You; Self-Organized Nanostructure Design in Functional Nitride Alloy Films (Virtual Presentation), ***Lars Hultman,*** *G. Greczynski,* Linköping University, Sweden; *I. Petrov, J. Greene,* Linköping University, Sweden; University of Illinois at Urbana-Champaign, USA; National Taiwan University of Science and Technology, Taiwan
4:40pm		
5:00pm		**INVITED: TS6-1-MoA-11** From Thin Films to Solid Oxide Fuel Cells, ***Scott Barnett,*** Northwestern University, USA
5:20pm		

Room Town & Country C

1:40pm	**B2-2-MoA-1** Synthesis of Rare Earth Silicate Coatings by CVD, ***Arthur Derrien***, *L. Lager, J. Roger, J. Danet, S. Jacques,* LCTS, CNRS, Univ. Bordeaux, France	**Hard Coatings and Vapor Deposition Technologies** **Session B2-2-MoA** **CVD Coatings and Technologies II** **Moderator:** **Raphael Boichot**, Grenoble-INP/CNRS, France
2:00pm	**B2-2-MoA-2** Doped Alumina Coatings, ***Zhenyu Liu***, Latrobe, USA	
2:20pm	**B2-2-MoA-3** Stress Control of AlN-based Multilayer Coatings with Amorphous Intermediate Layers, *V. Tabouret, R. Reboud, A. Crisci,* ***Frederic Mercier***, SIMAP, Grenoble-INP, CNRS, France	
2:40pm	**B2-2-MoA-4** Circumventing Thermodynamic Constraints – A Selective Kinetic Growth of Low Thermal Expansion Al_2TiO_5-coatings by Chemical Vapour Deposition, ***Sebastian Öhman***, Uppsala University, Angstrom Laboratory, Sweden	
3:00pm	**INVITED: B2-2-MoA-5** Atomic Layer Deposition of BN Based on Polymer Derived Ceramics Route: Fabrication of Functional and Protective Coating, ***Catherine Marichy***, *W. Hao, A. Hossain, C. Journet,* University Lyon, France	
3:20pm		
3:40pm	**F5-2-MoA-7** Theoretical Investigation of Sluggish Diffusion in Nitride Films of High-Entropy Alloys, ***Ganesh Kumar Nayak***, Montanuniversität Leoben, Austria; *A. Kretschmer, P. Mayrhofer,* TU Wien, Austria; *D. Holec,* Montanuniversität Leoben, Austria	**New Horizons in Coatings and Thin Films** **Session F5-2-MoA** **In-Silico Design of Novel Materials by Quantum Mechanics and Classical Methods II** **Moderators:** **David Holec**, Montanuniversität Leoben, Austria, **Davide G. Sangiovanni**, Linköping University, Sweden
4:00pm	**F5-2-MoA-8** Simulation of Transport and Mechanical Properties of TiSiN:Ag Self-Lubricating Coatings With Machine Learned Force Fields, ***Veniero Lenzi***, University of Minho, Portugal; *F. Fernandes,* University of Coimbra, Portugal; *L. Marques,* University of Minho, Portugal	
4:20pm	**INVITED: F5-2-MoA-9** Machine Learning Assisted Ab Initio Thermodynamics of Novel Materials, ***Prashanth Srinivasan***, University of Stuttgart, Germany; *F. Körmann,* Max-Planck Institut für Eisenforschung, Germany; *B. Grabowski,* University of Stuttgart, Germany	
4:40pm		
5:00pm	**INVITED: F5-2-MoA-11** Materials Design Principles of Amorphous Cathode Coatings for Lithium-ion Battery Applications, ***Jianli Cheng***, *K. Persson,* Lawrence Berkeley National Laboratory (LBNL), USA	
5:20pm		

	Room Town & Country D	
1:40pm	**INVITED: B4-2-MoA-1** Microstructural Simulations on Thin Films, ***Vinzenz Guski,*** *W. Verestek, S. Schmauder,* Universität Stuttgart, Germany	**Hard Coatings and Vapor Deposition Technologies** **Session B4-2-MoA** **Properties and Characterization of Hard Coatings and Surfaces II** **Moderators:** **Naureen Ghafoor**, Linköping University, Sweden, **Johan Nyman**, Linköping Univ., IFM, Thin Film Physics Div., Sweden, **Justinas Palisaitis**, Linköping Univ., IFM, Thin Film Physics Div., Sweden
2:00pm		
2:20pm	**B4-2-MoA-3** Ab Initio Supported the Development of Tin/Mon Superlattice Thin Films With Improved Hardness and Toughness, ***Zecui Gao,*** *J. Buchinger, N. Koutná, T. Wojcik, R. Hahn, P. Mayrhofer,* TU Wien, Institute of Materials Science and Technology, Austria	
2:40pm	**B4-2-MoA-4** Effect of Substrate Bias on the Residual Stress Depth Profile and the Mechanical Properties of Ti-Al-N Coatings Prepared by Cathodic Arc Deposition, ***Luis Varela,*** *K. Tsoutas, A. Miletic, E. Bousser,* Polytechnique Montréal, Canada; *J. Mendez,* MDS Coating Technologies Corporation, Canada; *J. Klemberg-Sapieha, L. Martinu,* Polytechnique Montréal, Canada	
3:00pm	**A1-2-MoA-5** Influence of Dispersed Nano-Y_2O_3 Particles in NiAlY and NiCrAlY MMC Coatings on Microstructure, Oxidation and Wear, ***Christoph Grimme,*** *R. Kupec, F. Schulze, M. Galetz,* DECHEMA-Forschungsinstitut, Germany	**Coatings for Use at High Temperatures** **Session A1-2-MoA** **Coatings to Resist High-temperature Oxidation, Corrosion, and Fouling II** **Moderators:** **Justyna Kulczyk-Malecka**, Manchester Metropolitan University, UK, **Gustavo Garcia Martin**, REP Energy Solutions, Spain
3:20pm	**A1-2-MoA-6** Reactive Magnetron Sputtering of Al-O-F for High-Temperature Oxidation Protection of γ-TiAl via the Halogen Effect, ***Stephen Brown,*** *F. Bergeron,* Polytechnique Montréal, Canada; *M. Cavarroc,* SAFRAN Tech, France; *S. Knittel,* SAFRAN Aircraft Engines, France; *L. Martinu, J. Klemberg-Sapieha,* Polytechnique Montréal, Canada	
3:40pm	**INVITED: A1-2-MoA-7** Development of a New Coating Against High-Temperature Erosion-Corrosion in Fluidized Bed Biomass Boiler Condition, ***Suzue Yoneda,*** *S. Tanaka,* Hokkaido University, Japan; *Y. Miyakoshi,* Hokkaido Research Organization, Japan; *T. Kogin,* Dai-ichi High Frequency Co., Ltd., Japan; *E. Ishikawa,* EBARA Environmental Plant Co., Ltd., Japan; *M. Noguchi,* EBARA Corporation, Japan; *S. Hayashi,* Hokkaido University, Japan	
4:00pm		
4:20pm	**A1-2-MoA-9** Introduction of Methodologies from Artificial Intelligence Into Slurry Coating Development, ***Vladislav Kolarik,*** *M. Juez Lorenzo, W. Becker,* Fraunhofer Institute for Chemical Technology ICT, Germany	
4:40pm	**A1-2-MoA-10** Slurry Coatings for Heat Exchangers of Particle Receivers of Solar Towers, ***Michael Kerbstadt,*** *A. Ulrich, M. Galetz,* DECHEMA-Forschungsinstitut, Germany	
5:00pm	**A1-2-MoA-11** Low Emissivity Thin Films Coatings to Reduce Thermal Emittance of SSA for Evacuated Solar Collectors, ***Antonio Caldarelli,*** *C. D'Alessandro, D. De Maio, D. De Luca, E. Gaudino, M. Musto, E. Di Gennaro,* University of Napoli "Federico II", Italy; *R. Russo,* National Research Council of Italy, Napoli Unit, Institute of Applied Sciences and Intelligent Systems, Italy	

Tuesday Morning, May 24, 2022

	Coatings for Biomedical and Healthcare Applications **Room Pacific C - Session D2-TuM** **Medical Devices: Bio-Tribo-Corrosion, Diagnostics, 3D Printing** **Moderators: Steve Bull**, Newcastle University, UK, **Hamdy Ibrahim**, University of Tennessee at Chattanooga, USA, **Margaret Stack**, University of Strathclyde, UK	**Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes** **Room Pacific D - Session H2-1-TuM** **Advanced Mechanical Testing of Surfaces, Thin Films, Coatings and Small Volumes I** **Moderators: James Gibson**, RWTH Aachen University, Germany, **Olivier Pierron**, Georgia Institute of Technology, USA
8:00am	**D2-TuM-1** Characterization of Hydroxyapatite Coatings Produced by Pulsed-laser Deposition on Ti_6Al_4V Substrates Fabricated by Electron Beam Melting, ***Octavio Andrés González-Estrada***, *R. Ospina, A. Pertuz,* Universidad Industrial de Santander, Colombia	**INVITED: H2-1-TuM-1** Reflectance Anisotropy Spectroscopy and Microscopy for the Investigation of Ultrathin Films With Micron Resolution, ***Ralph Spolenak***, ETH Zurich, Switzerland
8:20am	**D2-TuM-2** Preclinical in Vitro and in Vivo Assessment of High-Strength and Corrosion-Controlled Magnesium-Based Bone Implants, *C. Billings,* University of Tennessee Knoxville, USA; *M. Abdalla,* University of Illinois - Chicago, USA; *D. Anderson,* University of Tennessee Knoxville, USA; ***Hamdy Ibrahim***, University of Tennessee at Chattanooga, USA	
8:40am	**INVITED: D2-TuM-3** Understanding Tribological Contact in Biomedical Applications; The Role of Surface Film Formation and Its Correlation With Friction and Wear, ***Mark Rainforth***, The University of Sheffield, UK; *R. Namus, J. Qi, J. Nutter,* University of Sheffield, UK	**H2-1-TuM-3** Combinatorial Mechanical Microscopy Using Correlated Nanoindentation Mapping and EDX, ***Jeffrey M. Wheeler***, FemtoTools AG, Switzerland
9:00am		**H2-1-TuM-4** Progress in the Development of High Strain Rate Nanoindentation Experiments, ***Warren Oliver***, KLA Corporation, USA; *C. Walker, B. Hackett,* Texas A&M University, Department of Materials Science & Engineering, USA; *P. Sudharshan,* International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI) , India; *G. Pharr,* Texas A&M University, USA
9:20am	**D2-TuM-5** Corrosion Resistance of Cerium Oxynitride Thin Films for Use in Implants and Prothesis, *G. Numpaque Rojas,* ***Brian Felipe Mendez Bazurto***, *G. Cubillos Gonzalez,* Universidad Nacional de Colombia	**H2-1-TuM-5** Testing the Adhesion of a Sintered Ag Film on a Cu Substrate Using Laser Shocks, ***Xavier Milhet***, Institut Pprime - CNRS - ENSMA - Université de Poitiers, France; *T. de Resseguier,* institut pprime - CNRS - ENSMA - Université de Poitiers, France; *A. Sghuri,* Institut Pprime - CNRS - ENSMA - Université de Poitiers, France; *L. Signor,* institut pprime - CNRS - ENSMA - Université de Poitiers, France
9:40am	**D2-TuM-6** Porous Ti Under Tribocorrosion Solicitations: Some Positive Feedback and Some Scientific Benefits, *A. Gomes Costa,* CMEMS-Minho University, Portugal; *F. Viana,* FEUP, Portugal; *L. Rocha,* DTX, Portugal; *F. Toptan,* DMSE, İYTE, Turkey; ***Jean Geringer***, Mines Saint-Etienne, France	**H2-1-TuM-6** Transfer Learning in Characterization of Nanoindentation Induced Acoustic Events, ***Antanas Daugela***, Nanometronix LLC, USA; *J. Daugela,* Johns Hopkins University, USA
10:00am		**H2-1-TuM-7** Nanoindentation Testing to Measure Surface Free Energy in Thin Films and Engineered Surfaces, *M. Sebastiani,* Università degli studi Roma Tre, Italy; *P. Phani,* International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI), India; ***Edoardo M. Rossi***, Università degli studi Roma Tre, Italy; *R. Guillemet,* Thales Research & Technology, France; *W. Oliver,* Nanomechanics Inc., KLA Corporation, USA

Tuesday Morning, May 24, 2022

	Coatings for Use at High Temperatures **Room Pacific E - Session A1-3-TuM** **Coatings to Resist High-temperature Oxidation, Corrosion, and Fouling III** **Moderators:** **Gustavo García-Martín**, REP-Energy Solutions, Spain, **Justyna Kulczyk-Malecka**, Manchester Metropolitan Univ., UK	**Topical Symposia** **Room Town & Country A - Session TS6-2-TuM** **A Session to Acknowledge the Contributions of Joe Greene to the ASED, ICMCTF, AVS, and IUVSTA II** **Moderator:** **Scott Barnett**, Northwestern University, USA
8:00am		**INVITED: TS6-2-TuM-1** Metal-Ion-Controlled Thin Film Growth: What Have We Learnt During the Last Decade?, ***Grzegorz (Greg) Greczynski,*** Linköping Univ., IFM, Thin Film Physics Div., Sweden*; I. Petrov, J. Greene,* University of Illinois at Urbana Champaign, USA*; L. Hultman,* Linköping University, IFM, Thin Film Physics Division, Sweden
8:20am		
8:40am		**INVITED: TS6-2-TuM-3** Predictive Kinetics-based Epitaxial Film Growth Modeling for the SiGe, Si:B and SiGe:B Systems*,* ***Glenn Glass,*** Intel Corporation, USA
9:00am	**A1-3-TuM-4** Protective Sol-Gel Coatings for Steels Against Corrosion of Molten Carbonates for Concentrated Solar Power Plants*,* ***Gustavo García Martín,*** Universidad Complutense de Madrid, Spain*; T. de miguel Gamo,* Universidad Complutense de Madrid , Spain*; I. Lasanta Carrasco, M. Lambrecht, F. Pérez Trujillo, N. Garcia, C. Gómez de Castro,* Universidad Complutense de Madrid, Spain	
9:20am	**A1-3-TuM-5** Experimental Study on Steam Oxidation Resistance at 600ºC of Inconel 625 Coatings Deposited by HVOF and Laser Cladding*,* ***Francisco Javier Pérez Trujillo****, G. García Martín, A. Illana Sánchez, T. De Miguel Gamo,* Universidad Complutense de Madrid, Spain*; F. Gonçalves , M. Sousa,* Tecnologia e Engenharia de Materiais , Portugal	**INVITED: TS6-2-TuM-5** Growth Kinetics of Spontaneous Superlattices, and Single Wall Carbon Nanotubes Using Gas Phase Precursors*,* ***Yonglim Foo,*** Singapore Institute of Technology, Singapore
9:40am	**A1-3-TuM-6** Oxidation Kinetics of γ-TiAl Based Coating Materials*,* ***Paul Mayrhofer****, S. Kagerer, O. Hudak,* TU Wien, Austria*; M. Schloffer,* MTU Aero Engines, Muenchen, Germany*; H. Riedl,* TU Wien, Austria	
10:00am	**A1-3-TuM-7** The Impact of Aluminide Slurry Coatings on the Oxidation and Fatigue Resistance of High-Strength Ni-Based Valve Alloys*,* ***Sebastien Dryepondt****, R. Pillai , B. Armstrong, M. Lance, G. Muralidharan,* ORNL, USA	**INVITED: TS6-2-TuM-7** Engineering of Soft Materials for Stretchable Electronics*,* ***Nae-Eung Lee,*** Sungkyunkwan University, Korea (Republic of)
10:20am		

Tuesday Morning, May 24, 2022

	Room Town & Country B	
8:00am		**Tribology and Mechanical Behavior of Coatings and Engineered Surfaces** **Session E3-TuM** **Coatings for Automotive and Aerospace Applications** **Moderators:** **Nazlim Bagcivan**, Schaeffler Technologies GmbH & Co. KG, Germany, **Rainer Cremer**, KCS Europe GmbH, Germany, **Philipp Grützmacher**, Institute of Engineering Design and Product Development , Austria
8:20am		
8:40am	**E3-TuM-3** Thermomechanical Stability of Hard DLC Coatings Produced by HiPIMS-DOMS, ***João Carlos Oliveira,*** University of Coimbra, Portugal; *A. Vahidi,* University of Coimbra, Iran (Islamic Republic of); *F. Ferreira, R. Serra, A. Cavaleiro,* University of Coimbra, Portugal	
9:00am	**E3-TuM-4** Static and Dynamic Friction Assessment Using Novel High Temperature Tribometer, ***Marwan Azzi,*** Polytechnique Montreal, Canada; *E. Bitar-Nehme,* Tricomat inc, Canada; *J. Sapieha,* Polytechnique Montreal, Canada; *l. Martinu,* Polytechnique Montréal, Canada	
9:20am	**INVITED: E3-TuM-5** Study of the a-C:H Coating Wear Behaviour in Boundary Lubricated Tribological Contacts Using Raman-Based Profilometry (Virtual Presentation), ***Ardian Morina,*** University of Leeds, UK; *N. Xu,* University of Leeds, UK , UK	
9:40am		
10:00am	**E3-TuM-7** Erosion Resistance of TiAlN Coatings for Aerospace Applications, ***Zeliha Idil Kara,*** *S. Ozerinc,* Middle East Technical University, Turkey	

	Room Town & Country C	
8:00am		**New Horizons in Coatings and Thin Films** **Session F2-1-TuM** **High Entropy and Other Multi-principal-element Materials I** **Moderator:** **Erik Lewin**, Uppsala University, Sweden
8:20am	**F2-1-TuM-2** Elaboration and Characterization of High Entropy Nitride Al-Ti-Zr-Ta-Hf (-N) Deposited by Reactive Magnetron Sputtering for High Temperature Applications, ***Djallel Eddine TOUAIBIA****, M. ELGARAH, S. ACHACHE,* LASMIS, France*; A. MICHAU, F. Schuster,* Commissariat à l'Energie Atomique et aux énergies alternatives (CEA) Saclay, France*; F. SANCHETTE,* University of Technology Troyes (UTT), France	
8:40am	**F2-1-TuM-3** Strain-Stabilized Al-Containing High-Entropy Sublattice Nitrides, ***Andreas Kretschmer***[1]*, B. Hajas,* TU Wien, Institute of Materials Science and Technology, Austria*; D. Holec,* Montanuniversitat Leoben, Austria*; K. Yalamanchili, H. Rudigier,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein*; M. Hans, J. Schneider,* RWTH Aachen University, Germany*; P. Mayrhofer,* TU Wien, Institute of Materials Science and Technology, Austria	
9:00am	**F2-1-TuM-4** Structural and Mechanical Properties Investigation of a New TiTaZrHfW(-N) Refractory High Entropy Films Deposited by Reactive Magnetron Sputtering, ***Abdelhakim Bouissil****, S. Achache, F. Sanchette, M. El Garah,* LASMIS, Antenne de Nogent, Université de Technologie de Troyes, France	
9:20am		
9:40am	**G1-TuM-6** Photons meet Plasma – Adding Value to your Al, Mg and Ti Components, ***Anna Buling****,* ELB Eloxalwerk Ludwigsburg GmbH, Germany*; J. Zerrer,* ELB Eloxalwerk Ludwigsburg, Germany	**Surface Engineering - Applied Research and Industrial Applications** **Session G1-TuM** **Advances in Application Driven Research: New Methods, Materials, and Equipment for PVD, CVD, and PECVD Processes** **Moderators:** **Satish Dixit**, Plasma Technology Inc., USA, **Martin Engels**, IonBond Inc., USA
10:00am	**G1-TuM-7** The Effect of Coating Conditions on the Life of PVD Coated Steel Rods Immersed in a Molten Aluminum Die Casting Alloy, ***Stephen Midson****, N. Delfino de Campos Neto, W. May, A. Korenyi-Both, M. Kaufman,* Colorado School of Mines, USA	
10:20am	**INVITED: G1-TuM-8** Carbon-Based Surface Solutions for High Performance Forming Tools - A Journey from Material Research to Industrial Solutions, ***Vishal Khetan****,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, Switzerland	
10:40am		

[1] **Graduate Student Award Finalist**

	Room Town & Country D	
8:00am	**INVITED: B4-3-TuM-1** Thermal Stability of Nanotwinned Metallic Thin Films (Virtual Presentation)*, **Fan-Yi Ouyang**,* National Tsing Hua University, Taiwan	**Hard Coatings and Vapor Deposition Technologies** **Session B4-3-TuM** **Properties and Characterization of Hard Coatings and Surfaces III** **Moderators:** **Naureen Ghafoor**, Linköping University, Sweden, **Johan Nyman**, Linköping Univ., IFM, Thin Film Physics Div., Sweden, **Justinas Palisaitis**, Linköping Univ., IFM, Thin Film Physics Div., Sweden
8:20am		
8:40am	**B4-3-TuM-3** Phase Stability and Mechanical Characteristics of Sputtering (Mo, Hf)N Coatings*, **Shu-Yu Hsu**, Y. Chang,* National United University, Taiwan*; F. Wu,* Dept. of Materials Science and Engineering, National United University, Taiwan	
9:00am	**B4-3-TuM-4** Evidencing Different Dislocation Types in Magnetron-sputtered Epitaxial TiN Thin Films on MgO*, **Janella Salamania**, D. Sangiovanni,* Linköping University, IFM, Sweden*; L. Johnson, I. Schramm, K. Calamba,* Sandvik Coromant, Sweden*; T. Hsu,* Linköping University, IFM, Sweden*; B. Bakhit,* Linköping University, IFM, Thin Film Physics Division, Sweden*; R. Boyd, F. Tasnadi, I. Abrikosov, L. Rogström, M. Odén,* Linköping University, IFM, Sweden	
9:20am	**B4-3-TuM-5** TiN/$Zr_{0.34}Al_{0.66}N$ Multilayer Films: Growth Temperature Dependence on Structure and Mechanical Properties*, **Marcus Lorentzon**, N. Ghafoor, J. Birch,* Linköping Univ., IFM, Thin Film Physics Div., Sweden	
9:40am	**B4-3-TuM-6** Physicochemical Properties of Single Phased Tantalum Nitride Thin Films*, **Aurélie Achille**, A. Poulon-Quintin, F. Mauvy, D. Michau, S. Fourcade,* CNRS, Univ. Bordeaux, ICMCB, France*; C. Labrugere,* CNRS, Univ. Bordeaux, PLACAMAT, France*; M. Cavarroc,* SAFRAN Paris-Saclay – SAFRAN Tech, France	

Exhibitors Keynote Lecture
Room Town & Country A - Session EX-TuM
Exhibition Keynote Lecture
Moderator:
Grzegorz (Greg) Greczynski, Linköping University, Sweden

11:00am	**INVITED: EX-TuM-1** Fabrication and Characterization of Industrially Important Films and Coatings, ***Vincent S. Smentkowski,*** GE Research, USA	
11:20am		

	Room Pacific C	
1:40pm	**INVITED: TS2-1-TuA-1** in Situ Observation of Strain Transfer and Crack Formation in Evaporated and Printed Thin Films and Devices on Compliant Substrates, ***Patric A. Gruber,*** *N. Misra, T. Haas , S. Yi, B. Kim,* Karlsruhe Institute of Technology (KIT), Germany	**Topical Symposia** **Session TS2-1-TuA** **Thin Films on Polymer Substrates: Flexible Electronics and Beyond** **Moderators:** **Oleksandr Glushko**, Erich Schmid Institute of Materials Science, Austria, **Barbara Putz**, Montanuniversität Leoben, Leoben, Austria
2:00pm		
2:20pm	**TS2-1-TuA-3** Electrical Resistance During Cyclic Loading of Conductive Coatings – What Information is Hidden in the Data?, ***David Gebhart,*** *M. Cordill,* Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria	
2:40pm	**TS2-1-TuA-4** Plasma Surface Activation of Epoxy Painted Polymer Composites to Enhance Adhesion of PVD Coatings, ***Nicolas Ranger,*** Oerlikon Balzers/IRCER, France*; C. Jaoul, P. Tristant,* IRCER, France*; T. Maerten,* Oerlikon Balzers, France*; S. Belveze,* Oerlikon Balzers , France*; S. Guimond,* Oerlikon Balzers, Liechtenstein*; M. Cavarroc,* Safran Tech, France	
3:00pm	**TS2-1-TuA-5** MOKE-XRD Experiment for the Study of Magnetomechanical Properties of Thin Films Deposited on Stretchable Substrates, *H. Mahmoud,* Université Sorbonne Paris, Université de Poitiers—CNRS, France*;* ***Damien Faurie,*** Université Sorbonne Paris, France*; P. Godard,* Université de Poitiers—CNRS, France*; D. Thiaudière,* Soleil Synchrotron, France*; P. Renault,* Université de Poitiers—CNRS, France*; F. Zighem,* Université Sorbonne Paris, France	
3:20pm	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	
3:40pm		
4:00pm	**TS2-1-TuA-8** Nanoscale Deformation Mechanisms in Thin Film Metallic Glasses Explored by in-Situ SEM With Digital Image Correlation, ***Oleksandr Glushko,*** *C. Mitterer, J. Eckert,* Montanuniversität Leoben, Austria	

	Room Pacific D	
1:40pm	**D3-TuA-1** Enhanced Mechanical Properties and Microbiological Behavior of a Ag-C:H Coating Produced by Reactive pDCMS, *N. Fukumasu,* ***Pâmella Esteves****, V. Malaquias,* University of São Paulo, Brazil*; E. Prados,* Federal University of ABC, Brazil*; M. Hirata, A. Tschiptschin, I. Machado, R. Souza,* University of São Paulo, Brazil	**Coatings for Biomedical and Healthcare Applications** **Session D3-TuA** **Biointerfaces: Improving Cell Adhesion and Avoiding Bacteria. What Kinds of Coatings Should be Used?** **Moderator:** **Danieli B.C. Rodrigues**, University of Texas at Dallas, USA
2:00pm	**D3-TuA-2** Coating of Titanium Surfaces with Silver-Chitosan using Silane Linkers, ***Emily Coleman****, E. Abuhussein, M. Edwards, J. Bumgardner, J. Jennings,* University of Memphis, USA	
2:20pm	**INVITED: H3-TuA-3** Stabilized Nanocrystalline Thin Films for Enhanced Thermal, Radiation, and Mechanical Performance, ***Brad Boyce****,* Sandia National Laboratories, USA	**Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes** **Session H3-TuA** **Characterization of Coatings and Small Volumes in Harsh Environments** **Moderators: Thomas Edwards**, Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland, **Peter Hosemann**, University of California, Berkeley, USA
2:40pm		
3:00pm	**H3-TuA-5** Explaining How *H*/*E* Influences Coating System Wear Under Harsh Conditions - Insights from Elevated Temperature Nanoindentation, Scratch and Impact Tests, ***Ben Beake****,* Micro Materials Ltd, UK	
3:20pm	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	
3:40pm		
4:00pm	**H3-TuA-8** *In-Sem* Micromechanical Testing Up to 1000 °C of High Entropy Transition Metal Nitride Thin Films Alloyed With Al, *A. Pshyk,* Linköping University, IFM, Sweden*;* ***Thomas Edwards****,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland*; B. Bakhit,* Linköping University, IFM, Sweden*; M. Jain,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland*; P. Küttel,* Alemnis AG, Switzerland*; G. Greczynski, L. Hultmann,* Linköping University, IFM, Sweden*; J. Michler,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland	
4:20pm	**H3-TuA-9** Custom Cryo-Nanoindenter for in-Situ Investigations of the Brittle-to-Ductile Transition in a Scanning Electron Microscope, ***Hendrik Holz****, S. Gabel, B. Merle,* University Erlangen-Nuernberg, Germany	
4:40pm	**H3-TuA-10** Development of a Novel High Strain Rate Nanoindenter for Small-Scale Mechanical Characterization Over a Wide Strain Rate Range, ***Stefan Zeiler****, H. Holz, B. Merle,* University Erlangen-Nuernberg, Germany	

Tuesday Afternoon, May 24, 2022

	Surface Engineering - Applied Research and Industrial Applications **Room Pacific E - Session G3-TuA** **Innovative Surface Engineering for Advanced Cutting and Forming Tool Applications** **Moderators: Stepan Kyrsta**, Oerlikon Luxembourg, **Christoph Schiffers**, CemeCon AG, Germany	**Topical Symposia** **Room Town & Country A - Session TS6-3-TuA** **A Session to Acknowledge the Contributions of Joe Greene to the ASED, ICMCTF, AVS, and IUVSTA III** **Moderators:** **Ivan G. Petrov**, University of Illinois at Urbana-Champaign, USA, **Angus Rockett**, University of Illinois at Urbana-Champaign, USA
1:40pm	**G3-TuA-1** A New Tool in Coating Design: Managing Intrinsic Stresses in HiPIMS, ***Christoph Schiffers,*** *T. Leyendecker, W. Kölker, S. Bolz, B. Mesic,* CemeCon AG, Germany	**INVITED: TS6-3-TuA-1** Perspective on Thin-Film Metallic Glasses: Road to Industrial Production (Virtual Presentation), ***Jinn P. Chu,*** National Taiwan University of Science and Technology, Taiwan
2:00pm	**G3-TuA-2** Self-lubricating CrAlMoN High Performance Tool Coatings for Machining of TiAl6V4, *K. Bobzin, C. Kalscheuer, M. Carlet,* ***Nina Stachowski,*** Surface Engineering Institute - RWTH Aachen University, Germany*; W. Hintze, C. Möller, P. Ploog,* Institute of Production Management and Technology - Hamburg University of Technology (TUHH), Germany	
2:20pm	**INVITED: G3-TuA-3** Coating Design for Components for Extreme Applications, ***Ricardo Alexandre,*** TEandM, Portugal	**INVITED: TS6-3-TuA-3** Hollow Cathode Discharges: The Influence of the Electrode Material and Cathode Geometry, ***Stephen Muhl,*** IIM UNAM, CDMX, Mexico*; R. Sangines,* CNyN (CONACYT) UNAM, Ensenada, BC, Mexico*; J. Cruz,* CNyN UNAM, Ensenada, BC, Mexico
2:40pm		
3:00pm	**G3-TuA-5** The Use of Coatings to Minimize Soldering in Aluminum High Pressure Die Casting, ***Nelson Delfino de Campos Neto****, A. L. Korenyi-Both,* Colorado School of Mines, USA*; C. Vian,* Stellantis, USA*; S. P. Midson, M. J. Kaufman,* Colorado School of Mines, USA	
3:20pm	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**
3:40pm		
4:00pm	**INVITED: G3-TuA-8** Bringing Together Research, Job Coating and Market Needs, ***Carles Colominas,*** Flubetech, Spain	**INVITED: TS6-3-TuA-8** Ti-Nb Based Alloy Coatings Produced by Magnetron Co-sputtering, *D. Gonzalez,* Universidade Federal de Sao Carlos, Brazil*; V. Amigo-Borras,* Universitat Politècnica de València UPV, Spain*; V. Mastelaro,* Universidade de Sao Paulo, Brazil*;* ***Pedro Nascente,*** Universidade Federal de Sao Carlos, Brazil
4:20pm		
4:40pm	**G3-TuA-10** CrON-based Coatings for Plastic Processing Applications, ***Anders O. Eriksson****, T. Vermland, D. Fopp-Spori, J. Tischhauser,* Oerlikon Balzers, Oerlikon Surface Solution AG, Liechtenstein	**INVITED: TS6-3-TuA-10** Bill Sproul Award and Honorary ICMCTF Lecture: Modelling Reactive Sputtering: Back to the Future, ***Diederik Depla***[1]*, J. Van Bever, K. Strijckmans,* Ghent University, Belgium
5:00pm		

[1] **Bill Sproul Awardee**

Tuesday Afternoon, May 24, 2022

	Tribology and Mechanical Behavior of Coatings and Engineered Surfaces **Room Town & Country B - Session E1-1-TuA** **Friction, Wear, Lubrication Effects, and Modeling I** **Moderators: Noora Manninen**, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, **Andreas Rosenkranz**, Andreas Rosenkranz, Universidad de Chile	**New Horizons in Coatings and Thin Films** **Room Town & Country C - Session F2-2-TuA** **High Entropy and Other Multi-principal-element Materials II** **Moderator:** **Erik Lewin**, Uppsala University, Sweden
1:40pm	**INVITED: E1-1-TuA-1** 2D Transition Metal Carbide MXenes: Their Synthesis, Tunable Compositions and Mechanical Properties, ***Babak Anasori,*** Indiana University-Purdue University , USA*; B. Wyatt,* Indiana University-Purdue University, USA	
2:00pm		**F2-2-TuA-2** Structure and Properties of Refractory MoNbTaW+X (X = Ti,V,Cr,Mn,Hf) High Entropy Alloy Thin Films Deposited by HiPIMS*, G. Gruber,* Montanuniversität Leoben, Austria*; A. Lassnig, S. Zak, C. Gammer, M. Cordill,* Austrian Academy of Sciences, Austria*;* ***Robert Franz,*** Montanuniversität Leoben, Austria
2:20pm	**INVITED: E1-1-TuA-3** Grain Boundary Sliding and Low Friction in BCC Metals, ***Michael Chandross,*** Sandia National Laboratories, USA*; A. Hinkle,* CCDC & CBC, Aberdeen Proving Ground, USA*; M. Jones, P. Lu,* Sandia National Laboratories, USA*; N. Argibay,* Ames Laboratory, USA	**F2-2-TuA-3** Effect of Rare-earth yttrium Addition on Microstructure and Thermal Stability of Refractory TiTaZrHfW High Entropy Film, ***Mohamed EL GARAH,*** University of Technology of Troyes , France*; L. PATOUT, A. CHARAI,* Aix Marseille University , France*; F. SANCHETTE,* University of Technology of Troyes , France
2:40pm		**F2-2-TuA-4** Investigation of Strain Stabilization in Aluminum-Based High Entropy Sublattice Nitride Films, ***Balint Hajas****, A. Kretschmer, A. Kirnbauer, P. Mayrhofer,* Institute of Materials Science and Technology, TU Wien University, Vienna, Austria
3:00pm	**E1-1-TuA-5** Evaluation of Tribocoatings in Low Viscosity Fuels, ***Maddox Dockins****, A. Ayyagari, S. Srivilliputhur,* University of North Texas, USA*; S. Berkebile,* US DEVCOM Army Research Laboratory, USA*; D. Berman, A. Voevodin, S. Aouadi,* University of North Texas, USA	
3:20pm 3:40pm	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**
4:00pm	**E1-1-TuA-8** Phototribology: Control of Friction by Light*, B. Perotti,* UCS, Brazil*; A. Cammarata,* Czech Technical University in Prague, Czech Republic*; F. Cemin,* Université Paris-Saclay and UNICAMP, Brazil*; S. Sales de Mello,* UCS and UNICAMP, Brazil*; L. Leidens,* UCS, Brazil*; F. Echeverrigaray,* UCS and UNICAMP, Brazil*; T. Minea,* Université Paris-Saclay, France*; F. Alvarez,* UNICAMP, Brazil*; A. Michels,* UCS, Brazil*; T. Polcar,* University of Southampton and Czech Technical University , UK*;* ***Carlos Figueroa,*** UCS, Brazil	**F2-2-TuA-8** Magnetron Sputtering of Hard and Strong Multicomponent (HfNbTiVZr)C Thin Films, ***Barbara Osinger****, S. Fritze, L. Riekehr, E. Lewin, U. Jansson,* Uppsala University, Angstrom Laboratory, Sweden
4:20pm	**E1-1-TuA-9** Development and Evaluation of Self-Lubricating Nanocomposite Coatings for Metal Forming Dies, ***Jianliang Lin,*** Southwest Research Institute, San Antonio Texas, USA	**F2-2-TuA-9** Comparative Study of Reactively and Non-Reactively Sputtered High-Entropy Metal-Sublattice Carbides, ***Alexander Kirnbauer****, P. Mayrhofer,* TU Wien, Institute of Materials Science and Technology, Austria*; P. Polcik,* Plansee Composite Materials GmbH, Germany
4:40pm		

	Room Town & Country D	
1:40pm 2:00pm	**INVITED: A2-1-TuA-1** Mechanisms of CMAS Attack on Aero-Engine Components, ***Elisa Zaleski,*** Pratt & Whitney, USA	**Coatings for Use at High Temperatures** **Session A2-1-TuA** **Thermal and Environmental Barrier Coatings I** **Moderators:** **Sabine Faulhaber**, University of California, San Diego, USA, **Pantcho Stoyanov**, Concordia University, Canada
2:20pm	**A2-1-TuA-3** A New Approach to Protect Thermal Barrier Coatings (TBCs) Using Air Plasma Spray (APS)/High-Velocity Oxygen Fuel (HVOF) Coating of Si_3N_4, ***Said Bakkar,*** *E. Zucha, J. Moldenhauer, E. Steinmiller,* University of Dallas, USA; *T. Hossain,* Ceriumlab , USA; *W. Flanagan,* University of Dallas, USA	
2:40pm	**A2-1-TuA-4** Development of a Low Power Plasma Reactor for the Local Deposition of YSZ Thermal Barrier Coatings at Atmospheric Pressure, ***Sandra Segondy,*** Chimie ParisTech, PSL Research University, CNRS, Institut de Recherche de Chimie Paris (IRCP), France; *C. Rio, S. Landais,* ONERA, DMAS, Université Paris-Saclay, France; *C. Guyon, F. Rousseau,* Chimie ParisTech, PSL Research University, CNRS, Institut de Recherche de Chimie Paris (IRCP), France	
3:00pm	**A2-1-TuA-5** Oxidation Behaviour and Mechanical Properties of Sputter-Deposited $TMSi_2$ Coatings (TM = Mo, Nb, Ta), ***Ahmed Bahr,*** Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien, Austria; *S. Richter, T. Glechner, T. Wojcik,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien , Austria; *J. Ramm,* Oerlikon Surface Solutions AG, Liechtenstein; *O. Hunold,* Oerlikon Surface Solutions AG , Liechtenstein; *S. Kolozsvári,* Plansee Composite Materials GmbH , Germany; *H. Riedl,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien, Austria	
3:20pm 3:40pm	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	
4:00pm	**A2-1-TuA-8** New Hydrogen Barrier Coatings, ***Akram ALHUSSEIN,*** *I. LAKDHAR,* University of Technology of Troyes , France; *J. CREUS,* La Rochelle University , France	
4:20pm	**A2-1-TuA-9** Dual–Layer PVD Coating System With Integrated Diffusion Barrier for Oxidation Protection of γ–Tial Based Alloys, ***Peter-Philipp Bauer,*** German Aerospace Center, Germany; *R. Swadźba,* Łukasiewicz Research Network - Institute for Ferrous Metallurgy, Poland; *L. Klamann, N. Laska,* German Aerospace Center, Germany	
4:40pm	**B4-4-TuA-10** Synthesis by CVD and Properties of Polycrystalline Silicon Coatings for Structural Applications, ***Axel Le Doze,*** *G. Couégnat, J. Danet, F. Rebillat, G. Chollon,* LCTS, CNRS, Univ. Bordeaux, CEA, SAFRAN CERAMICS, France	**Hard Coatings and Vapor Deposition Technologies** **Session B4-4-TuA** **Properties and Characterization of Hard Coatings and Surfaces IV** **Moderators:** **Naureen Ghafoor**, Linköping University, Sweden, **Johan Nyman**, Linköping Univ., IFM, Thin Film Physics Div., Sweden, **Justinas Palisaitis**, Linköping Univ., IFM, Thin Film Physics Div., Sweden
5:00pm	**B4-4-TuA-11** Erosion Resistance of Thin Films Under Solid Particle Flows and Temperature, ***Kai Treutler,*** *J. Hamje,* Clausthal University of Technology, Germany; *T. Bick,* Clausthal University of Technology, Clausthal, Germany; *V. Wesling,* Clausthal University of Technology, Germany	

Tuesday Evening, May 24, 2022

Special Interest Talks
Room Town & Country A - Session SIT2-TuSIT
Special Interest Session II
Moderator: Samir Aouadi, University of North Texas, USA

7:00pm	**INVITED: SIT2-TuSIT-1** Evaluating Electro-Mechanical Reliability using In-Situ Methods, ***Megan J. Cordill,*** Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria	
7:20pm		

Wednesday Morning, May 25, 2022

	Room Pacific C	
8:00am	**INVITED: C1-WeM-1** Engineering Ultra-thin Films for Extreme Optics and Photonics, ***Jeremy Munday,*** University of California at Davis, USA	**Functional Thin Films and Surfaces** **Session C1-WeM** **Optical Materials and Thin Films** **Moderator:** **Nikolas Podraza**, University of Toledo, USA
8:20am		
8:40am	**C1-WeM-3** Study of $Cs_x(CH_3NH_3)_{1-x}PbBr_3$ Perovskite with XPS Imaging and Small Area Spectra, ***Tatyana Bendikov,*** Weizmann Institute of Science, Israel; *Y. Rakita,* Columbia University, USA; *H. Kaslasi, G. Hodes, D. Cahen,* Weizmann Institute of Science, Israel	
9:00am	**C1-WeM-4** Tuning the Optical Properties of PVD Deposited SiC Coatings by a Design of Experiments Approach, ***Vincent Tabouret,*** *A. Crisci, M. Morais, G. Berthomé, E. Garel, G. Renou, D. CHaussende,* CNRS, France	
9:20am	**C1-WeM-5** Submicron Structures Obtained by Laser Dewetting of Metallic Thin Film Stacks, ***Bruno Felipe Leitao Almeida,*** *L. Gallais,* Institut Fresnel, France; *J. Fonné, D. Guimard,* Saint-Gobain Research Paris, France	
9:40am		
10:00am		
10:20am	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	
10:40am		
11:00am	**INVITED: C1-WeM-10** Design of High-Performance VO_2-Based Thermochromic Coatings, and Pathway for Their Industry-Friendly Preparation, ***Jiri Houska,*** *D. Kolenaty, T. Barta, J. Rezek, J. Vlcek,* University of West Bohemia, Czechia	
11:20am		

	Room Pacific D	
8:00am	**F4-1-WeM-1** Synthesis and Oxidation Behavior of $Ti_{0.35}Al_{0.65}B_y$(y= 1.69- 2.43) Coatings, *A. Navidi Kashani, S. Mráz, D. Holzapfel, M. Hans,* RWTH Aachen University, Germany*; D. Primetzhofer,* Uppsala University, Sweden*; L. Löfler, P. Ondracka,* ***Jochen Schneider,*** RWTH Aachen University, Germany	**New Horizons in Coatings and Thin Films** **Session F4-1-WeM** **New Horizons in Boron-Containing Coatings I** **Moderators:** **Helmut Riedl**, TU Wien, Austria, **Johanna Rosén**, Linköping University, Sweden
8:20am	**F4-1-WeM-2** Influence of Si Alloying on the High-Temperature Mechanical Properties of CrB_2 Based Thin Films, ***Lukas Zauner,*** *T. Glechner, R. Hahn,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien, Austria*; O. Hunold, J. Ramm,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein*; P. Polcik,* Plansee Composite Materials GmbH, Germany*; H. Riedl,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien, Austria	
8:40am	**INVITED: F4-1-WeM-3** Design of Novel Transition Metal Diboride-Based Pvd Thin Films: From Pure Compounds to Alloys, Composites and Multilayers, ***Michael Stueber,*** *V. Ott, S. Ulrich,* Karlsruhe Institute of Technology (KIT), Germany*; H. Riedl, P. Mayrhofer,* Technische Universität Wien, Austria	
9:00am		
9:20am	**F4-1-WeM-5** Tribological Properties and Thermal Stability of $V_{1-x}Mo_xB_y$ Coatings, ***Katarína Viskupová,*** *B. Grančič, T. Roch, M. Truchlý, M. Mikula, V. Šroba, L. Satrapinskyy, P. Kúš,* Comenius University, Bratislava, Slovakia	
9:40am	**H2-2-WeM-6** Abnormal Grain Growth in Ultrafine Grained Ni Under High-Cycle Loading, ***Olivier Pierron,*** Georgia Institute of Technology, USA	**Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes** **Session H2-2-WeM** **Advanced Mechanical Testing of Surfaces, Thin Films, Coatings and Small Volumes II** **Moderators:** **James Gibson**, RWTH Aachen University, Germany, **Olivier Pierron**, Georgia Institute of Technology, USA
10:00am		
10:20am	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	
10:40am		
11:00am	**H2-2-WeM-10** Superlattice Effect on the Mechanical Properties of Transition Metal Diboride Coatings, ***Rainer Hahn,*** *A. Tymoszuk,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien, Austria*; O. Hunold,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein*; P. Polcik,* Plansee Composite Materials GmbH, Germany*; P. Mayrhofer,* Institute of Materials Science and Technology, TU Wien, Austria*; H. Riedl,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien, Austria	
11:20am	**H2-2-WeM-11** Fatigue Behavior of Gold Thin Films at Elevated Temperature Studied by Bulge Testing, ***Anna Krapf,*** Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany	
11:40am	**INVITED: H2-2-WeM-12** Tensegrity Metamaterials - Towards Failure Resistant Engineering Systems, ***Jens Bauer,*** University of California, Irvine, USA	
12:00pm		

Wednesday Morning, May 25, 2022

	Coatings for Use at High Temperatures **Room Pacific E - Session A2-2-WeM** **Thermal and Environmental Barrier Coatings II** **Moderators:** **Sabine Faulhaber**, University of California, San Diego, USA, **Kang Lee**, NASA Glenn Research Center, USA	**Tribology and Mechanical Behavior of Coatings and Engineered Surfaces** **Room Town & Country B - Session E1-2-WeM** **Friction, Wear, Lubrication Effects, and Modeling II** **Moderators: Noora Manninen**, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, **Andreas Rosenkranz**, Andreas Rosenkranz, Universidad de Chile
8:00am	**INVITED: A2-2-WeM-1** Design of Multi-Component Rare Earth Silicate EBCs for Property Optimization, *M. Ridley, C. Miller, R. Webster, H. Olson, A. Salanova, K. Tomko, J. Tomko, J. Ihlefeld,* University of Virginia, USA; *C. Toher,* Duke University, USA; *P. Hopkins,* ***Elizabeth Opila,*** University of Virginia, USA	**E1-2-WeM-1** MXenes: A Model Material for Solid Lubricants, ***Philipp Grützmacher,*** Vienna University of Technology, Austria; *C. Gachot,* TU Wien, Austria; *S. Suarez,* Saarland University, Germany; *A. Rosenkranz,* University of Chile
8:20am		**E1-2-WeM-2** Structural and Nanomechanical Properties of Manganese Phosphate Coatings, ***Esteban Broitman,*** *Y. Kadin, P. Andric,* SKF B.V. - Research and Technology Development (RTD), Netherlands; *V. Ott, M. Stüber,* Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM), Germany
8:40am	**INVITED: A2-2-WeM-3** Cyclic Steam Oxidation of Single Layer Ytterbium Disilicate-Based Environmental Barrier Coatings Deposited onto Enhanced Roughness Silicon Carbide, *K. Kane,* Oak Ridge National Laboratory, USA; *E. Garcia,* Center for Thermal Spray Research, Stony Brook University, USA; *C. Parker, M. Lance, B. Pint,* ***Mackenzie Ridley,*** Oak Ridge National Laboratory, USA	**INVITED: E1-2-WeM-3** Nanoscale Materials for Macroscale Applications: Zero-Friction and Zero-Wear Carbon Films (Virtual Presentation), ***Diana Berman,*** University of North Texas, USA
9:00am		
9:20am	**A2-2-WeM-5** Raman Spectroscopic Identification of Ytterbium Silicate and Thermally Grown Oxide Silica Phases in Environmental Barrier Coatings, ***Michael Lance,*** *K. Kance, B. Pint,* Oak Ridge National Laboratory, USA	**E1-2-WeM-5** Self Lubricant TiSiN/TiAgN Coatings: Room and High Temperature Tribological Behavior, *F. Fernandes, A. Al-Rjoub,* University of Coimbra, Portugal; ***Albano Cavaleiro,*** Instituto Pedro Nunes, Portugal
9:40am	**A2-2-WeM-6** The Behavior Of Suspension Plasma Sprayed 8YSZ Thermal Barrier Coating With Laser Microtextured Bond Coat Under High Temperature Testing, ***Pawel Sokolowski,*** *T. Kielczawa, M. Nowakowska,* Wroclaw University of Science and Technology, Poland; *R. Musalek, T. Tesar,* Institute of Plasma Physics of the Czech Academy of Sciences, Czechia	**E1-2-WeM-6** Design and Tribological Characterization of Self-Lubricating Alloys for Laser Deposition Processes, *H. Torres,* AC2T Research GmbH, Austria; ***Carsten Gachot,*** TU Wien, Austria; *M. Rodriguez Ripoll,* AC2T Research GmbH, Austria
10:00am		
10:20am	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**
10:40am		
11:00am	**INVITED: A2-2-WeM-10** Oxidation and Failure in Environmental Barrier Coatings, ***Bryan Harder,*** *K. Lee, M. Presby,* NASA Glenn Research Center, USA; *J. Setlock,* University of Toledo, USA	**E1-2-WeM-10** On the Tribological Performance of Magnetron Sputtered W-S-C Coatings With Conventional and Graded Composition, ***Todor Vuchkov,*** Instituto Pedro Nunes, Laboratory for Wear, Testing and Materials, Portugal; *A. Cavaleiro,* University of Coimbra, Portugal
11:20am		**E1-2-WeM-11** Revising the Role of Oxygen "Impurities" in Tribological and Mechanical Performance of MoS_2 Coatings Under Vacuum and Ambient Air Conditions, ***Andrey Bondarev,*** *T. Polcar,* Czech Technical University in Prague, Czech Republic
11:40am	**A2-2-WeM-12** Impact of Surface Degradation on the Radiative Heat Transfer in Thermal Barrier Coatings, ***Francis Blanchard,*** *B. Baloukas, M. Azzi, M. Kadi, J. Sapieha, L. Martinu,* Polytechnique Montreal, Canada	**E1-2-WeM-12** Understanding Ultra-Low Coefficient of Friction of a-C Coated Surfaces Under High Contact Pressure and Humidity Levels, ***Newton K. Fukumasu,*** *A. Tschiptschin, I. Machado, R. Souza,* University of São Paulo, Brazil
12:00pm	**A2-2-WeM-13** Development and Characterization of an Environmental Barrier Coating System for Novel Mo-Si-Ti Alloys Using Magnetron Sputtering, ***Ronja Anton,*** *N. Laska, U. Schulz,* German Aerospace Center (DLR), Germany	

Wednesday Morning, May 25, 2022

	Room Town & Country C	
8:00am		**Hard Coatings and Vapor Deposition Technologies** **Session B5-1-WeM** **Hard and Multifunctional Nanostructured Coatings I** **Moderator:** **Tomas Kozak**, University of West Bohemia, Czechia
8:20am	**B5-1-WeM-2** Enhanced Thermal Stability of (Ti,Al)N Coatings by Oxygen Incorporation, ***Damian M. Holzapfel***[1], RWTH Aachen University, Germany; *D. Music,* Malmö University, Sweden; *M. Hans,* RWTH Aachen University, Germany; *S. Wolff-Goodrich,* Max-Planck-Institut für Eisenforschung GmbH, Germany; *D. Holec,* Montanuniversität Leoben, Austria; *D. Bogdanovski,* RWTH Aachen University, Germany; *M. Arndt,* Oerlikon Balzers Coating Germany GmbH, Germany; *A. Eriksson, K. Yalamanchili,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; *D. Primetzhofer,* Uppsala University, Sweden; *C. Liebscher,* Max-Planck-Institut für Eisenforschung GmbH, Germany; *J. Schneider,* RWTH Aachen University, Germany	
8:40am	**B5-1-WeM-3** Metastable Single- or Dual-Phase Structures in Magnetron Sputtered W-Zr Thin-Film Alloys: Properties and Thermal Behavior, *M. Cervena, S. Haviar, R. Cerstvy, J. Rezek,* ***Petr Zeman,*** University of West Bohemia, Czechia	
9:00am	**B5-1-WeM-4** A Conformable SiAlN/Mo Thermal Barrier Layer for Titanium Alloys Deposited by Magnetron Sputtering, *Z. Gao,* The University of Manchester, UK; ***Justyna Kulczyk-Malecka,*** *P. Kelly,* Manchester Metropolitan University, UK; *P. Xiao,* The University of Manchester, UK	
9:20am	**INVITED: B5-1-WeM-5** Thermal Decomposition of Hard Coatings - Insights from Nanometer-Scale Characterization, ***Marcus Hans,*** RWTH Aachen University, Germany; *Z. Czigány,* Centre for Energy Research, Hungary; *D. Neuß, J. Sälker, H. Rueß, J. Krause, P. Ondračka,* RWTH Aachen University, Germany; *D. Music,* Malmö University, Sweden; *S. Evertz, D. Holzapfel,* RWTH Aachen University, Germany; *G. Nayak, D. Holec,* Montanuniversität Leoben, Austria; *D. Primetzhofer,* Uppsala University, Sweden; *J. Schneider,* RWTH Aachen University, Germany	
9:40am		
10:00am	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	
10:20am		
10:40am		
11:00am	**B6-1-WeM-10** Thermally Induced Phase Formation in Magnetron Sputtered Ru/Al Multilayers - Impact of Modulation Period on Transition Temperatures and Phase Sequence, ***Vincent Ott,*** Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM), Germany; *C. Schaefer,* Saarland University, Chair of Functional Materials, Germany; *T. Weingaertner, S. Ulrich,* Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM), Germany; *C. Pauly,* Saarland University, Chair of Functional Materials, Germany; *M. Stueber,* Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM), Germany	**Hard Coatings and Vapor Deposition Technologies** **Session B6-1-WeM** **Coating Design and Architectures I** **Moderator:** **Paul Heinz Mayrhofer**, Institute of Materials Science and Technology, TU Wien, Austria
11:20am	**INVITED: B6-1-WeM-11** Structural Design of Diboride Thin Films (Virtual Presentation), ***Marian Mikula,*** *T. Fiantok,* Comenius University in Bratislava, Slovakia; *N. Koutná,* Linkoping University, Sweden; *V. Šroba,* Comenius University in Bratislava, Slovakia; *D. Sangiovanni,* Linkoping University, Sweden	
11:40am		

[1] **Graduate Student Award Finalist**

Special Interest Talks
Room Town & Country A - Session SIT3-WeSIT
Special Interest Session III
Moderator: Samir Aouadi, University of North Texas, USA

1:00pm	**INVITED: SIT3-WeSIT-1** Tribological Coating Solutions and Lubrication Strategies for Gas Turbine Engines*,* ***Pantcho Stoyanov,*** Concordia University, Canada	
1:20pm		

Wednesday Afternoon, May 25, 2022

	New Horizons in Coatings and Thin Films **Room Pacific D - Session F1-WeA** **Nanomaterials and Nanofabrication** **Moderators:** **Diederik Depla**, Ghent University, Belgium, **Vladimir Popok**, Aalborg University, Denmark	**New Horizons in Coatings and Thin Films** **Room Pacific E - Session F4-2-WeA** **New Horizons in Boron-Containing Coatings II** **Moderators: Marcus Hans**, RWTH Aachen University, Germany, **Helmut Riedl**, TU Wien, Austria, **Johanna Rosén**, Linköping University, Sweden
2:00pm	**INVITED: F1-WeA-1** Polymer Films with Gas-Phase Aggregated Nanoparticles: Formation and Applications, ***Vladimir Popok,*** Aalborg University, Denmark	**INVITED: F4-2-WeA-1** Understanding and Optimizing the Properties of Superhard Metal Borides, ***Sarah Tolbert,*** University of California, Los Angeles, USA
2:20pm		
2:40pm	**F1-WeA-3** Stress Evolution in Particle Strengthened Metal-Oxide Nanolaminates: Insights from in-Situ Synchrotron Diffraction Experiments, ***Barbara Putz,*** Montanuniversität Leoben, Austria; *A. Sharma,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland; *K. Gradwohl,* Leibniz-Institut für Kristallzüchtung , Germany; *P. Gruber,* Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM)-WBM, Germany; *D. Többens,* Helmholtz-Zentrum Berlin für Materialien und Energie (HZB), Germany; *X. Maeder, J. Michler,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland	**F4-2-WeA-3** Si alloyed Transition Metal Diborides - A Novel Class of Oxidation Resistant Coating Materials, *T. Glechner, L. Zauner, R. Hahn, A. Bahr, T. Wojcik,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien, Austria; *J. Ramm, O. Hunold,* Oerlikon Surface Solutions AG, Liechtenstein; *P. Polcik,* Plansee Composite Materials GmbH, Germany; ***Helmut Riedl,*** Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien, Austria
3:00pm	**F1-WeA-4** Structure-Processing Relationships of Chiral Organic-Inorganic Thin Films for Circularly Polarized Light Detection, ***Katherine Burzynski,*** AFRL / Azimuth Corp., USA; *E. Muller,* AFRL / UES, USA; *A. Trout,* The Ohio State University, USA; *W. Kennedy,* Air Force Research Laboratory, Materials and Manufacturing Directorate, USA	**F4-2-WeA-4** High-Power Impulse Magnetron Sputter Deposition of TiB_x Thin Films: Effect of Pulse Length and Peak Current, ***Niklas Hellgren,*** Messiah University, USA; *I. Zhirkov,* Linköping University, IFM, Thin Film Physics Division, Sweden; *M. Sortica,* Uppsala University, Sweden; *A. Petruhins, G. Greczynski,* Linköping University, IFM, Thin Film Physics Division, Sweden; *I. Petrov,* University of Illinois at Urbana-Champaign, USA; *L. Hultman, J. Rosen,* Linköping University, IFM, Thin Film Physics Division, Sweden
3:20pm	**F1-WeA-5** Bio-Inspired Antibacterial Metasurfaces Fabricated by Glancing Angle Deposition, ***Chuang Qu,*** *J. Rozsa, H. Jung, M. Running, S. McNamara, K. Walsh,* University of Louisville, USA	**F4-2-WeA-5** Effect of Ar Particles on the Growth and Mechanical Properties of ZrB_{2+x} Films, ***Tomas Fiantok,*** *T. Roch,* Comenius University, Bratislava, Slovakia; *P. Svec,* Academy of Science, Bratislava, Slovakia; *M. Truchly, V. Sroba, M. Mikula,* Comenius University, Bratislava, Slovakia
3:40pm	**F1-WeA-6** Polymer Templates-Assisted Design of ZnO Films via Swelling-Assisted Sequential Infiltration Synthesis (SIS) and Swelling Based Infiltration (SBI): Properties, Adsorption Characteristics, and Performance, ***Khalil Omotosho,*** University of North Texas, USA	**INVITED: F4-2-WeA-6** Accurate Composition Depth Profiling of Light Elements in Thin Films Using Ion Beams - What Can Be Achieved?, ***Daniel Primetzhofer,*** Uppsala University, Sweden
4:00pm	**F1-WeA-7** Pulsed Aerosol Assisted Plasma Deposition: Process and Film Composition Characterization Using Nanoparticles Optical Properties, ***Adèle Girardeau,*** LAPLACE, LCC, Safran Tech, France; *G. Carnide,* LAPLACE, LCC, IMRCP, France; *A. Mingotaud,* IMRCP, France; *M. Cavarroc,* Safran Tech, France; *M. Kahn,* LCC, France; *R. Clergereaux,* LAPLACE, France	

Wednesday Afternoon, May 25, 2022

	Room Town & Country B	
2:00pm 2:20pm	**INVITED: E1-3-WeA-1** Critical Materials-Free Cermet Coatings by Thermal Spraying: Sliding and Abrasive Wear Behaviour (Virtual Presentation)*, **Giovanni Bolelli,*** Unimore, Italy	**Tribology and Mechanical Behavior of Coatings and Engineered Surfaces** **Session E1-3-WeA** **Friction, Wear, Lubrication Effects, and Modeling III** **Moderators:** **Noora Manninen**, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, **Andreas Rosenkranz**, Andreas Rosenkranz, Universidad de Chile
2:40pm	**E1-3-WeA-3** Tribological Behavior of Zirconium Coated Ti-6Al-4V by Pack Cementation*, **Beyza Öztürk**, L. Mengis,* DECHEMA Research Institute, Germany*; D. Dickes, U. Glatzel,* University of Bayreuth, Germany*; M. Galetz,* DECHEMA Research Institute, Germany	
3:00pm	**E1-3-WeA-4** Study of Electrochemical and Tribological Properties of Electrophoretic Deposited Thin and Thick Graphene Coatings on Pure Titanium Substrate*, **Madhusmita Mallick**, A. N,* Indian Institute of Technology (IIT), Madras, India	
3:20pm 3:40pm	**INVITED: TS3-WeA-5** Current and Future Trends in Materials for Advanced Lithium Batteries*, O. Kahvecioglu, **Carrie Siu,*** Argonne National Laboratory, USA	**Topical Symposia** **Session TS3-WeA** **Electrochemical Cells – Hydrogen and Batteries** **Moderators:** **Nazlim Bagcivan**, Schaeffler Technologies GmbH & Co. KG, Germany, **Klaus Böbel**, Bosch GmbH, Germany
4:00pm	**TS3-WeA-7** Application of Bipolar Hipims to Enhance the Durability Performance of Carbon Coatings in Metallic Bipolar Plates*, J. Santiago , I. Fernandez, **Pablo Diaz-Rodriguez,*** Nano4Energy, Spain*; M. Panizo, M. Morales-Furio, C. Molpeceres,* Technical University Madrid, Spain*; J. Sanchez-Lopez,* CSIC-University Sevilla, Spain*; L. Mendizabal,* Tekniker, Spain*; G. Sevilla, M. Sanchez, N. Rojas,* Spanish Hydrogen National Center, Spain	
4:20pm 4:40pm	**INVITED: TS3-WeA-8** Coatings for Fuel Cells and Electrolyzers: From Materials to Processes, Challenges and Opportunities*, **Etienne Bouyer,*** Commissariat à l'Energie Atomique et aux Energies Alternatives (CEA), Grenoble, France	
5:00pm	**TS3-WeA-10** Electrochemically Stable PVD Coatings With Low Interfacial Contact Resistance for Proton Exchange Membrane Electrolyzer Bipolar Plates*, **Nathan Kruppe**, E. Schulz, M. Öte, N. Bagcivan, J. Hackner, S. Rüth,* Schaeffler Technologies GmbH & Co. KG, Germany	

	Room Town & Country C	
2:00pm	**INVITED: B5-2-WeA-1** Design of Coatings for Harsh Environments by Computation and Experiment (Virtual Presentation), ***Efstathios "Stathis" I. Meletis,*** University of Texas at Arlington, USA	**Hard Coatings and Vapor Deposition Technologies** **Session B5-2-WeA** **Hard and Multifunctional Nanostructured Coatings II** **Moderators:** **Rainer Hahn**, TU Wien, Institute of Materials Science and Technology, Austria, **Tomas Kozak**, University of West Bohemia, Czechia
2:20pm		
2:40pm	**B5-2-WeA-3** Microstructure and Properties of PVD Synthesized Super-hard Ti-B-N Coatings, ***Rebecca Janknecht,*** *R. Hahn, A. Kirnbauer,* TU Wien, Institute of Materials Science and Technology, Austria*; P. Polcik ,* Plansee Composite Materials GmbH, Germany*; P. Mayrhofer,* TU Wien, Institute of Materials Science and Technology, Austria	
3:00pm	**B5-2-WeA-4** Enhanced Mechanical Performance of Nanostructured B-Dopednitride Coatings Deposited by HiPIMS With Positive Pulses, *P. Diaz-Rodriguez, A. Mendez, J. Santiago,* ***Ivan Fernandez****, A. Wennberg, J. Endrino,* Nano4Energy, Spain*; E. Chacon, A. Guzman, M. Panizo,* Universidad Politecnica de Madrid, Spain*; M. Monclus, J. Molina,* IMDEA Materiales, Spain	
3:20pm	**B5-2-WeA-5** Development of TiB_2 Coatings in a New Generation Industrial Reactor Based on Hybrid DC-pulsed and HIPIMS Magnetron Sputtering on HSS Steels – Tribological Study at Room, Medium and High Temperature, *E. Arias,* Asociación de la Industria Navarra, Spain*;* ***Gonzalo Garcia fuentes,*** Asociación de la industria Navarra, Spain*; H. Gabriel,* PVT Plasma und Vakuum Technik GmbH, Germany*; I. Fernández,* N4E, Spain*; J. Fernández Palacio,* Asociación de la Industria Navarra, Spain	
3:40pm	**B5-2-WeA-6** Study the Effect of Nozzle Geometry on Spray Coating by Aerosol Deposition Method, ***Bahareh Farahani,*** California State University, Long Beach, USA*; M. Jadidi,* Ryerson University, Canada*; S. Moghtadernejad,* California State University, Long Beach, USA	
4:00pm	**B5-2-WeA-7** Thick Ceramic Coatings Deposited by Supercritical Fluid Chemical Deposition (SFCD), ***Erwan Peigney****, G. Aubert,* ICMCB-CNRS, France*; M. Cavarroc,* SAFRAN, France*; A. Poulon-Quintin, C. Aymonier,* ICMCB-CNRS, France	

Wednesday Afternoon, May 25, 2022

	Room Town & Country D	
2:00pm	**B6-2-WeA-1** Industrial Antibacterial Decorative Coatings, ***Ivan Kolev,*** *P. Immich, A. Fuchs, H. Vercoulen, D. Doerwald,* IHI Hauzer Techno Coating B.V., Netherlands	**Hard Coatings and Vapor Deposition Technologies** **Session B6-2-WeA** **Coating Design and Architectures II** **Moderator:** **Paul Heinz Mayrhofer**, Institute of Materials Science and Technology, TU Wien, Austria
2:20pm	**B6-2-WeA-2** Few Thoughts about Hard Coatings and Machining Industry, ***Aharon Inspektor,*** Carnegie Mellon University, USA	
2:40pm	**INVITED: B6-2-WeA-3** Effect of Coating Architecture on Stress Relief Mechanism of TiZrN Coatings on Si Substrate (Virtual Presentation), ***Jia-Hong Huang,*** *M. Liu, Y. Chiu,* National Tsing Hua University, Taiwan	
3:00pm		
3:20pm	**INVITED: C2-1-WeA-5** Developing Electronic Materials With an Eye Towards Packaging, ***Marcel A. Wall,*** Intel Corporation, USA	**Functional Thin Films and Surfaces** **Session C2-1-WeA** **Thin Films for Electronic Devices I** **Moderators:** **Julien Keraudy**, Oerlikon Balzers, Oerlikon Surface Solution AG, Liechtenstein, **Jörg Patscheider**, Evatec AG, Switzerland
3:40pm		
4:00pm	**C2-1-WeA-7** Crystallographic Study of Non-polar $Al_{0.7}Sc_{0.3}N$(11-20) Grown on r-plane Al_2O_3 Using Magnetron Sputter Epitaxy, ***Akash Nair,*** *L. Kirste,* Fraunhofer Institute for Applied Solid State Physics IAF, Germany*; N. Manuel Feil,* University of Freiburg, Germany*; M. Prescher, A. Žukauskaitė,* Fraunhofer Institute for Applied Solid State Physics IAF, Germany	
4:20pm	**C2-1-WeA-8** Tuning Barrier Properties of Metal Nitride Thin Films for GaN Transistor Applications, ***Clemens Nyffeler,*** *B. Attarimashalkoubeh, J. Patscheider, B. Heinz,* Evatec AG, Switzerland	
4:40pm	**INVITED: C2-1-WeA-9** Advancements in Metallic Interconnects for the Semiconductor Industry, ***Thomas Ponnuswamy,*** Lam Research Corp, USA	
5:00pm		

Awards Convocation and Honorary Lecture
Room Town & Country A - Session HL-WeHL
Bunshah Award Honorary Lecture
Moderator:
Ivan G. Petrov, University of Illinois at Urbana-Champaign, USA

5:45pm **INVITED: HL-WeHL-1** R.F. Bunshah Award and ICMCTF Lecture Invited Talk: Functional Coating and Surface Engineering for Real Life*,*
Jolanta-Ewa Klemberg-Sapieha[1]*,* Polytechnique Montréal, Canada

6:05pm

[1] **R.F. Bunshah Awardee**

Thursday Morning, May 26, 2022

	Room Pacific D	
8:00am	**INVITED: C3-1-ThM-1** Designing Optimal Environments for Surface Catalytic Reactions in Perovskite Oxide Electrodes, *L. Martin,* ***Abel Fernandez,*** University of California, Berkeley, USA	**Functional Thin Films and Surfaces** **Session C3-1-ThM** **Thin Films for Energy Storage and Conversion I** **Moderators:** **Clio Azina**, RWTH Aachen University, Germany, **Tushar Shimpi**, Colorado State University, USA
8:20am		
8:40am	**C3-1-ThM-3** Halide Perovskites: Advanced Photovoltiac Materials Empowered by a Unique Bonding Mechanism, ***Matthias Wuttig,*** Sommerfeldstrasse, Germany; *C. Schön, M. Schumacher,* RWTH Aachen University, Germany; *J. Robertson,* University of Cambridge , UK; *P. Golub,* Heyrovsky Institute of Physical Chemistry, Czechia; *E. Bousquet,* Liege University, Belgium; *C. Gatti,* CNR-SCITEC, Italy; *J. Raty,* University Liege, Belgium	
9:00am	**INVITED: C2-2-ThM-4** Thermal, Plasma-enhanced and Spatial Atomic Layer Deposition as an Enabling Nanotechnology for Electronic Devices, ***Erwin Kessels,*** Eindhoven University of Technology, Netherlands	**Functional Thin Films and Surfaces** **Session C2-2-ThM** **Thin Films for Electronic Devices II** **Moderators:** **Julien Keraudy**, Oerlikon Balzers, Oerlikon Surface Solution AG, Liechtenstein, **Jörg Patscheider**, Evatec AG, Switzerland
9:20am		
9:40am	**C2-2-ThM-6** Effects of Annealing Conditions on Temperature Coefficient of Resistance of Pt/AlO_X Thermistors, ***Atasi Dan,*** *E. Antunes, C. Yung, N. Tomlin, M. Stephens, J. Lehman,* Applied Physics Division, National Institute of Standards and Technology (NIST), Boulder, USA	
10:00am	**C2-2-ThM-7** Ultrathin Transition Metal Silicides Investigated In Situ Using Ion Scattering, ***Philipp M. Wolf,*** *H. Bruce, W. Hallén, E. Pitthan, Z. Zhang,* Uppsala University, Sweden; *C. Lavoie,* IBM T. J. Watson Research Center, USA; *T. Tran, D. Primetzhofer,* Uppsala University, Sweden	
10:20am	**C2-2-ThM-8** Synthesis of a New Ternary Nitride Semiconductor - Zn_2VN_3: A Combinatorial Exploration of the Zn-V-N Phase Space, *S. Zhuk,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland; *A. Kistanov,* University of Oulu, Finland; *S. Boehme,* ETH Zürich, Switzerland; *N. Ott, M. Stiefel,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland; *M. Kovalenko,* ETH Zürich, Switzerland; ***Sebastian Siol,*** Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland	
10:40am	**C2-2-ThM-9** Theoretical and Experimental Approaches for the Determination of Functional Properties of a New Semiconductor: $MgSnN_2$, ***Agathe Virfeu,*** *F. Alnjiman, S. Diliberto, J. Ghanbaja,* Institut Jean Lamour - Université de Lorraine, France; *E. Haye,* University of Namur, Belgium; *S. Migot, J. Pierson,* Institut Jean Lamour - Université de Lorraine, France	
11:00am	**C2-2-ThM-10** Relative Effects of Pulsed Laser Deposition Parameters on the Stoichiometry of Multiferroic Thin Films, ***W. C. McGinnis,*** *A. Hening, T. Emery-Adleman,* Naval Information Warfare Center Pacific, USA	
11:20am	**C2-2-ThM-11** Effects of Carbon Addition on $Ge_2Sb_2Te_5$ Film Structure and Properties, ***David Adams,*** *E. Lang, T. Clark, C. Sobczak, E. Scott, J. Custer,* Sandia National Laboratories, USA; *T. Beechem,* Purdue University, USA; *K. Hattar, M. Rodriguez,* Sandia National Laboratories, USA	

Room Pacific E

New Horizons in Coatings and Thin Films
Session F4-3-ThM
New Horizons in Boron-Containing Coatings III
Moderators:
Marcus Hans, RWTH Aachen University, Germany,
Helmut Riedl, TU Wien, Austria,
Johanna Rosén, Linköping University, Sweden

8:00am	
8:20am	
8:40am	**F4-3-ThM-3** Synthesis of MoAlB Thin Films ContainingMoB MBene Regions, *R. Sahu,* Max-Planck-Institut für Eisenforschung GmbH, RWTH Aachen University, Germany*; D. Bogdanovski, S. Evertz, P. Pöllmann, D. Holzapfel, E. Mayer, J. Achenbach,* RWTH Aachen University, Germany*; S. Zhang,* Max-Planck-Institut für Eisenforschung GmbH, Germany*; M. Hans,* RWTH Aachen University, Germany*; D. Primetzhofer,* Uppsala University, Sweden*; C. Scheu,* Max-Planck-Institut für Eisenforschung GmbH, RWTH Aachen University, Germany*; **Jochen M. Schneider**,* Materials Chemistry, RWTH Aachen University, Germany
9:00am	**F4-3-ThM-4** On the Surpassing Fracture Toughness of TiB_2±Z Thin Films, ***Christoph Fuger**, A. Hirle, R. Hahn, T. Wojcik,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien, Austria*; O. Hunold,* Oerlikon Balzers, Oerlikon Surface Solutions AG , Liechtenstein*; P. Polcik,* Plansee Composite Materials GmbH, Germany*; H. Riedl,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien , Austria
9:20am	**INVITED: F4-3-ThM-5** Revealing the Beauty of Imperfection in Novel Diboride Coatings by Transmission Electron Microscopy*, **Justinas Palisaitis**,* Linköping Univ., IFM, Thin Film Physics Div., Sweden
9:40am	
10:00am	**F4-3-ThM-7** Thermally Induced Structure Evolution and Improved Oxidation Behavior of Ternary $Ta_{1-x}Al_xB_{2+\Delta}$ Hard Thin Films*, **Viktor Šroba**,* Comenius University, Bratislava, Slovakia*; T. Fiantok,* Comenius University in Bratislava, Slovakia*; M. Truchlý, T. Roch, B. Grančič,* Comenius University, Bratislava, Slovakia*; P. Švec,Jr.,* Institute of Physics, Slovak Academy of Sciences, Slovakia*; Š. Nagy,* Institute of Materials and Machine Mechanics SAS, Slovakia*; V. Izai,* Comenius University, Bratislava, Slovakia*; T. Glechner,* Christian Doppler Laboratory for Surface Engineering of High-performance Components, Austria*; H. Riedl,* Institute of Materials Science and Technology, TU Wien, Austria*; P. Kúš, M. Mikula,* Comenius University, Bratislava, Slovakia
10:20am	**INVITED: F4-3-ThM-8** Mapping the X-B-C Systems: Search for the Elusive X_2BC Phase*, **Pavel Soucek**, S. Debnarova, M. Alishahi, S. Mirzaei, M. Kroker, L. Zabransky, V. Bursikova,* Masaryk University, Czechia*; Z. Czigany, K. Balazsi,* Centre for Energy Research, Hungary*; M. Hans, D. Holzapfel, S. Mraz, J. Schneider,* RWTH Aachen, Germany*; P. Vasina,* Masaryk University, Czechia
10:40am	
11:00am	**F4-3-ThM-10** Industrial Deposition of W-B-C Coatings: Properties and Process Modelling*, **Michael Kroker**, P. Souček, L. Zábranský, V. Buršíková,* Masaryk University, Czechia*; V. Sochora, M. Jílek,* SHM s.r.o., Czechia*; P. Vašina,* Masaryk University, Czechia
11:20am	**F4-3-ThM-11** Magnetron Sputter Deposition of Boron Carbide Films on Tilted Substrates*, **Swanee Shin**, L. Bayu Aji,* Lawrence Livermore National Laboratory, USA*; J. Bae,* General Atomics, USA*; A. Engwall, M. Nielsen, J. Hammons,* Lawrence Livermore National Laboratory, USA*; X. Zuo, B. Lee,* Argonne National Laboratory, USA*; X. Lepro Chavez, P. Mirkarimi, S. Kucheyev,* Lawrence Livermore National Laboratory, USA

Thursday Morning, May 26, 2022

Room Town & Country B

8:00am	**INVITED: G2-ThM-1** Surface Engineering Opportunities: Harsh Environments Meeting New Strategies for Microstructural Designs (Virtual Presentation), ***Chris Berndt,*** Australian Research Council, Industrial Transformation Training Centre, Australia	**Surface Engineering - Applied Research and Industrial Applications** **Session G2-ThM** **Surface Modification of Components in Automotive, Aerospace and Manufacturing Applications** **Moderators:** **Satish Dixit**, Plasma Technology Inc., USA, **Heidrun Klostermann**, Fraunhofer FEP, Germany
8:20am		
8:40am	**INVITED: G2-ThM-3** Plasma Nitriding of Forming Tools for the Automotive Industry - Challenges and Opportunities, ***Manuel Mee,*** Oerlikon Balzers Coating Germany GmbH, Germany	
9:00am		
9:20am	**G2-ThM-5** Enhanced Wear and Corrosion Properties of Stainless Steel by Electron Induced Plasma Nitriding, ***Petros Abraha,*** Meijo University, Japan	
9:40am	**G2-ThM-6** Tribological and Machining Performance of TiSiN(Ag) Coatings Deposited by HiPIMS, ***Diogo Cavaleiro,*** *S. Carvalho, F. Fernandes,* University of Coimbra, Portugal	
10:00am	**G2-ThM-7** Crystal Structure, Localized Surface Plasmon Resonance and Sensing Properties of Infrared Transparent Conductive Thin Films, ***Liangge Xu,*** Harbin Institute of Technology, China	
10:20am	**G2-ThM-8** Research on the Anti-Reflection Performance of Tetrahedral Amorphous Carbon Coatings by Ga Doping, ***HoeKun Kim,*** *K. Lee, S. Lee,* Korea Aerospace University, Korea (Republic of)	
10:40am	**E2-1-ThM-9** Effect of Thin Film Properties on Delamination Behavior and Interface Adhesion, ***Alice Lassnig,*** *S. Zak, R. Pippan,* Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria; *C. Mitterer,* Montanuniversität Leoben, Austria; *M. Cordill,* Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria	**Tribology and Mechanical Behavior of Coatings and Engineered Surfaces** **Session E2-1-ThM** **Mechanical Properties and Adhesion I** **Moderators:** **Carsten Gachot**, Vienna University of Technology, Austria, **Bo-Shiuan Li**, Oxford University, UK
11:00am	**E2-1-ThM-10** Buckling-Induced Delamination: Connection between Mode–Mixity and Dundurs´ Parameters, ***Stanislav Zak,*** *M. Cordill,* Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria	
11:20am	**E2-1-ThM-11** Colored Picosecond Acoustics Versus Scotch Tape Adhesion Test: Confrontation on a Series of Similar Samples With a Variable Adhesion, *A. Vital-Juarez,* IEMN UMR CNRS 8520, France; *J. Desmarres,* CNES, France; ***Arnaud DEVOS,*** IEMN UMR CNRS 8520, France	
11:40am	**INVITED: E2-1-ThM-12** High-Throughput Screening of Adhesion and Friction of Solid Interfaces, ***Maria Clelia Righi,*** University of Bologna, Italy	
12:00pm		

	Hard Coatings and Vapor Deposition Technologies **Room Town & Country C - Session B1-1-ThM** **PVD Coatings and Technologies I** **Moderator: Frank Kaulfuss**, Fraunhofer Institute for Material and Beam Technology (IWS), Germany	**Hard Coatings and Vapor Deposition Technologies** **Room Town & Country D - Session B8-1-ThM** **HiPIMS, Pulsed Plasmas and Energetic Deposition I** **Moderators: Tiberiu Minea**, Université Paris-Saclay, France, **Martin Rudolph**, Leibniz Inst. of Surface Eng. (IOM), Germany
8:00am		**B8-1-ThM-1** the Role of He (23S1) Metastable Atoms to Generate High Current Density in Pulsed Magnetron Discharge, ***Abderzak FARSY***, Laboratoire de Physique des Gaz et des Plasmas (LPGP), University Paris Saclay - CNRS, Orsay, France; *E. Morel,* SuperGrid Institute, France; *T. Minea,* Laboratoire de Physique des Gaz et des Plasmas (LPGP), University Paris Saclay -CNRS, Orsay, France
8:20am	**B1-1-ThM-2** Optimization of RF Magnetron Sputter Deposition of Ultrathick Boron Carbide Coatings, ***Alison Engwall***, Lawrence Livermore National Laboratory, USA; *J. Bae,* General Atomics, USA; *L. Bayu Aji, S. Shin, P. Mirkarimi, S. Kucheyev,* Lawrence Livermore National Laboratory, USA	**B8-1-ThM-2** Transport of Ions and Neutrals in HiPIMS Studied by Particle-Based Simulations, ***Tomas Kozak***, University of West Bohemia, Czechia
8:40am	**INVITED: B1-1-ThM-3** Hybrid Technologies for Wear Protective Coatings With Adaptive Behavior, ***Andrey Voevodin***, University of North Texas, USA	**INVITED: B8-1-ThM-3** Kinetic Investigation of Electron Heating in HiPIMS Discharges, ***Bocong Zheng***, Fraunhofer USA; *Y. Fu,* Tsinghua University, China; *K. Wang, T. Schuelke,* Fraunhofer USA; *Q. Fan,* Michigan State University, USA
9:00am		
9:20am	**B1-1-ThM-5** Cylindrical Magnetron Deposition of TiAlN Coatings with HiPIMS, ***Veronika Simova***, *O. Zabeida, L. Varela Jimenez, J. Qian, J. Klemberg-Sapieha, L. Martinu,* Polytechnique Montréal, Canada	**B8-1-ThM-5** The Influence of the Magnetic Field on the Discharge Parameters of a High Power Impulse Magnetron Sputtering Discharge, ***Martin Rudolph***, Leibniz Institute of Surface Engineering (IOM), Germany; *N. Brenning,* KTH Royal Intstitute of Technology, Sweden; *H. Hajihoseini,* University of Iceland; *. Raadu,* KTH Royal Institute of Technology, Sweden; *T. Minea,* Université Paris– Saclay, France; *A. Anders,* Leibniz Institute of Surface Engineering (IOM), Germany; *J. Gudmundsson,* University of Iceland; *D. Lundin,* Linköping University, IFM, Sweden
9:40am	**B1-1-ThM-6** Development of VC-based Early Transition Metal Carbide Superlattices via Compound Target Magnetron Sputtering, ***Barbara Schmid***, *N. Koutná, R. Hahn, J. Buchinger,* TU Wien, Institute of Materials Science and Technology, Austria; *S. Kolozsvari,* Plansee Composite Materials, Germany; *E. Pitthan Filho, D. Primetzhofer,* Uppsala University, Sweden; *P. Mayrhofer,* TU Wien, Institute of Materials Science and Technology, Austria	**B8-1-ThM-6** Digitalisation Strategies for a Digital Twin of the Synthesis of Functional Materials by High Power Impulse Magnetron Sputtering and Other Plasma PVD Processes, ***Arutiun Ehiasarian***, *A. Arunachalam Sugumaran, P. Hovsepian,* Sheffield Hallam University, UK; *C. Davies, P. Hatto,* Ionbond UK
10:00am	**B1-1-ThM-7** New Approach to Ceria-Based Electrolyte Deposition by Reactive Magnetron Sputtering, ***Kamel Ouari***, *E. Zgheib, S. Achache,* LASMIS, University of Technology of Troyes, France; *M. Arab Pour Yazdi, A. Billard, P. Briois,* FEMTO-ST, University of Technology of Belfort-Montbéliard, France; *F. Sanchette,* LASMIS, University of Technology of Troyes, France	**B8-1-ThM-7** Decrease of the Interfacial Adhesion to Polymers and Pharmaceuticals Through Modification of Steel Surfaces by PVD and CVD Techniques, *M. Lima,* University of Minho, Portugal; *R. Silva,* University of Aveiro, Portugal; *F. Ferreira,* University of Coimbra, Portugal; *F. Oliveira, R. Silva,* University of Aveiro, Portugal; *A. Cavaleiro,* ***Sandra Carvalho***, University of Coimbra, Portugal
10:20am	**B1-1-ThM-8** Sputter-Deposited Zr-Cu Thin Film Metallic Glasses: Microstructure and Properties Control of as-Deposited Films and Impact of Ultra-Short Pulsed Laser Irradiation Treatments on the Film's Structure, ***Alejandro Borroto***, Institut Jean Lamour - Université de Lorraine, France; *M. Prudent,* Laboratoire Hubert Curien - Université de Lyon, France; *S. Bruyère,* Institut Jean Lamour - Université de Lorraine, France; *F. Bourquard,* Laboratoire Hubert Curien - Université de Lyon, France; *D. Pilloud, D. Horwat,* Institut Jean Lamour - Université de Lorraine, France; *M. Leroy,* IREIS, Groupe HEF, France; *P. Steyer,* MATEIS, INSA Lyon, Université de Lyon, France; *J. Colombier, F. Garrelie,* Laboratoire Hubert Curien - Université de Lyon, France; *J. Pierson,* Institut Jean Lamour - Université de Lorraine, France	**B8-1-ThM-8** Target Erosion Effects During Hipims Deposition of Ultrathick Au-Ta Alloy Films, *J. Bae,* General Atomics, USA; *A. Engwall, L. Bayu Aji, S. Shin, A. Baker, J. Moody,* ***S. O. Kucheyev***, Lawrence Livermore National Laboratory, USA

Thursday Lunch, May 26, 2022

	Focused Topic Session **Room Town & Country C - Session FTS1-ThL** **Focused Topic Session I**	
12:20pm	**FTS1-ThL-1** The Art of Publishing*, **Jörg Patscheider**,* Evatec AG, Switzerland	
12:40pm		
1:00pm		

Thursday Afternoon, May 26, 2022

	Hard Coatings and Vapor Deposition Technologies **Room Pacific D - Session B3-ThA** **Deposition Technologies and Applications for Carbon-based Coatings** **Moderators: Konrad Fadenberger**, Robert Bosch GmbH, Germany, **Frank Papa**, GP Plasma, USA	**Topical Symposia** **Room Pacific E - Session TS4-ThA** **Big Data, Machine Learning, Artificial Intelligence and High-Throughput Methods** **Moderator:** **Igor Abrikosov**, Linköping University, IFM, Sweden
1:20pm	**B3-ThA-1** Smooth and Wear-resistant Carbon Coatings Deposited by S3p™, ***Julien Kéraudy***, *K. Siegfried, D. Martin, S. Guimond,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein	**INVITED: TS4-ThA-1** New 3D and 2D Metal Borides from Materials Synthesis Guided by High-Throughput Simulations, ***Johanna Rosen***, Linkoping University, Sweden
1:40pm	**B3-ThA-2** New Developments on Hydrogen Free Carbon Coatings for Automotive, Industrial and Tool Applications, ***Philipp Immich***, *L. Tegelaers, G. Negrea, R. Jacobs, G. Fransen,* IHI Hauzer Techno Coating B.V., Netherlands	
2:00pm	**INVITED: B3-ThA-3** *Carbon-Based Coatings for Forming and Protection of Stainless Steel Sheets* , ***Marcus Morstein***, Hightech Zentrum Aargau AG, Switzerland	**TS4-ThA-3** Machine Learned Moment Tensor Potentials for Hard Coatings, ***Ferenc Tasnádi***, *F. Bock, M. Odén, I. Abrikosov,* IFM Linköping University, Sweden
2:20pm		**INVITED: TS4-ThA-4** High-Throughput Rapid Experimental Alloy Development (HT-READ), ***Kenneth Vecchio***, UC San Diego, Dept. of NanoEngineering, USA
2:40pm	**B3-ThA-5** DLC Coatings: Diamond Hardness & Graphite Lubrication Combined to Meet Industrial Application Requirements, ***Hamid Bolvardi***, PLATIT AG, Switzerland; *J. Kluson, M. Jilek,* PLATIT a.s., Czechia; *R. Zemlicka, A. Lümkemann,* PLATIT AG, Switzerland	
3:00pm	**B3-ThA-6** Modeling of High Power Impulse Magnetron Sputtering Discharges With Graphite Target, *H. Eliasson,* Linkoping University, Sweden; *M. Rudolph,* Leibniz Institute of Surface Engineering (IOM), Germany; *N. Brenning,* KTH Royal Institute of Technology, Sweden; *H. Hajihoseini,* University of Twente, Netherlands; *M. Zanaska,* Linkoping University, Sweden; *M. Adriaans,* Eindhoven University of Technology, Netherlands; *M. Raadu,* KTH Royal Institute of Technology, Sweden; ***Tiberiu Minea***, Universite Paris-Saclay, France; *J. Gudmundsson,* University of Iceland; *D. Lundin,* Linkoping University, Sweden	**INVITED: TS4-ThA-6** Finding Thermally Robust Superhard Materials with Machine Learning, ***Jakoah Brgoch***, University of Houston, USA
3:20pm	**B3-ThA-7** Time Resolved Determination of Plasma Parameters, Ionization and Macroparticles in an Industrial Scale Ta-C Laser-Arc Coating System, ***Mathis Klette***, Kiel University, Germany; *M. Kopte, W. Fukarek,* VTD Vakuumtechnik Dresden GmbH, Germany; *H. Kersten,* Kiel University, Germany	
3:40pm	**B3-ThA-8** Fabrication of Hot Magnetron Carbon Targets for a High-Rate Films Deposition by Using Magnetron Sputtering Technique Under the Injection of Neon-Helium Gas Mixture, ***Bartosz Wicher***, *R. Chodun,* Warsaw University of Technology, Poland; *Ł. Skowroński, M. Trzcinski,* Bydgoszcz University of Science and Technology, Poland; *K. Król,* Institute of Microelectronics and Optoelectronics, Warsaw University of Technology, Poland; *A. Lachowski,* Institute of High Pressure Physics, Polish Academy of Sciences, Poland; *K. Nowakowska-Langier,* National Centre for Nuclear Research (NCBJ), Poland; *K. Zdunek,* Warsaw University of Technology, Poland	**TS4-ThA-8** Rational Composition Optimization: Coupling Mixture Designs, Combinatorial Methods and Machine Learning, ***Elise GAREL***, *H. VAN LANDEGHEM, J. PAROUTY, M. VERDIER, S. COINDEAU, R. MARTIN, F. ROBAUT, R. BOICHOT,* SIMAP, Grenoble-INP, CNRS, France
4:00pm	**B3-ThA-9** Adjusting the Properties of ta-C by Doping with Metals and Non-metals, ***Frank Kaulfuss***, *F. Hofmann, T. Kruelle, V. Weihnacht,* Fraunhofer Institute for Material and Beam Technology (IWS), Germany	**TS4-ThA-9** Transfer Learning of Thermodynamic and Elstic Properties of Hard-Coating Alloys, ***Henrik Levämäki***, *F. Tasnadi, D. Sangiovanni,* Linköping University, IFM, Sweden; *L. Johnson,* Sandvik Coromant, Sweden; *R. Armiento, I. Abrikosov,* Linköping University, IFM, Sweden
4:20pm	**B3-ThA-10** Improved Tribological Properties of DLC Coatings by Pulsed Laser Hardening, ***Sylvain Le Coultre***, Berner Fachhochschule, Switzerland; *J. Matthey, C. Rieille,* HE-Arc, Switzerland; *B. Neuenschwander,* Berner Fachhochschule, Switzerland	**TS4-ThA-10** Data-Driven Search for Thermal Insulators Guided by Anharmonicity: From First Principles to Machine Learning, ***Florian Knoop***, Linköping University, IFM, Sweden; *M. Langer,* Technical University of Berlin, Germany; *C. Carbogno,* NOMAD Laboratory at the Fritz Haber Institute of the Max Planck Society, Germany; *M. Rupp,* University of Konstanz, Germany; *M. Scheffler,* NOMAD Laboratory at the Fritz Haber Institute of the Max Planck Society, Germany
4:40pm		**TS4-ThA-11** 2D Phase Mapping of Hf-Al-Si Refractory Complex Concentrated Alloy Produced using High-Throughput Magnetron Sputtering, ***Sophia Cooper***, *M. Dockins, M. Young, A. Voevodin,* University of North Texas, USA; *A. Ghoshal, V. Blair,* U.S. Army Futures Command, USA; *S. Aouadi,* University of North Texas, USA

	Room Town & Country B	
1:20pm		**Tribology and Mechanical Behavior of Coatings and Engineered Surfaces** **Session E2-2-ThA** **Mechanical Properties and Adhesion II** **Moderators:** **Carsten Gachot**, Vienna University of Technology, Austria, **Alice Lassnig**, Austrian Academy of Sciences, Austria
1:40pm		
2:00pm	**INVITED: E2-2-ThA-3** Reliability Assessment of Thin Films and Multilayers in Electronic Packages (Virtual Presentation)*,* ***Golta Khatibi,*** TU Wien, Austria	
2:20pm		
2:40pm	**E2-2-ThA-5** A Measurement Structure for *in-situ* Electrical Monitoring of Fatigue Delamination*,* ***Sebastian Moser,*** *D. Tscharnuter, M. Nelhiebel, M. Reisinger, J. Zechner,* KAI Kompetenzzentrum Automobil- und Industrieelektronik GmbH, Austria*; M. Cordill,* Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria	
3:00pm	**E2-2-ThA-6** Modeling of Residual Stress Evolution in Thin Films: Effects of Growth Kinetics, Microstructural Evolution and Energetic Particle*, E. Chason, T. Su, Z. Rao, S. Berman,* Brown University, USA*;* ***Diederik Depla,*** Ghent University, Belgium	
3:20pm	**E2-2-ThA-7** Mechanical, Structural, Morphological and Biological Evaluation of Multilayer Coatings of HA-Ag/TiO2/TiN/Ti on Ti6Al4V Obtained by Magnetron Sputtering for Implant Application*,* ***Julián Andrés Lenis Rodas****, F. Bolívar Osorio, E. Contreras Romero,* University of Antioquia, Colombia*; A. Hurtado Macías,* CIMAV, Mexico*; P. Rico, J. Gómez Ribelles,* Valencia Polytechnic University, Spain*; M. Pacha Olivenza, M. Gonzales Martin ,* University of Extremadura, Spain	

Thursday Afternoon, May 26, 2022

	Room Town & Country C	
1:20pm	**INVITED: B1-2-ThA-1** Ultra-Precision Optical Surface Processing by Reactive Atmospheric Plasmas and Low Energy Ion Beams (Virtual Presentation), ***Thomas Arnold,*** Leibniz Institute of Surface Engineering (IOM), Germany*; J. Bauer,* Leibniz Institute of Surface Engineering (IOM), Germany , Germany*; G. Boehm, H. Müller,* Leibniz Institut of Surface Engineering (IOM), Germany	**Hard Coatings and Vapor Deposition Technologies** **Session B1-2-ThA** **PVD Coatings and Technologies II** **Moderator:** **Frank Kaulfuss**, Fraunhofer Institute for Material and Beam Technology (IWS), Germany
1:40pm		
2:00pm	**B1-2-ThA-3** A Combinatorial Approach to Developing Sputter-Deposited Heavy-Metal Alloy Films for Inertial Confinement Fusion Applications, ***Leonardus Bimo Bayu Aji,*** *A. Engwall,* Lawrence Livermore National Laboratory, USA*; J. Bae,* General Atomics, USA*; A. Baker, S. Shin, S. McCall, J. Moody, S. Kucheyev,* Lawrence Livermore National Laboratory, USA	
2:20pm	**B1-2-ThA-4** Machine Learning Based Model for Plasma Prediction in HPPMS Processes, *K. Bobzin, C. Kalscheuer, M. Carlet,* ***Julia Janowitz,*** Surface Engineering Institute - RWTH Aachen University, Germany	
2:40pm	**B1-2-ThA-5** Oxidation Stability of Oxynitride CrAlON Hard Coatings, *K. Bobzin, C. Kalscheuer,* Surface Engineering Institute - RWTH Aachen University, Germany*; G. Grundmeier, T. de los Arcos, S. Schwiderek,* Technical and Macromolecular Chemistry - University of Paderborn, Germany*;* ***Marco Carlet,*** Surface Engineering Institute - RWTH Aachen University, Germany	
3:00pm	**INVITED: C3-2-ThA-6** Atomic/Molecular Layer Deposition of Layer-Engineered Inorganic-Organic Thin Films for Emerging Energy Technologies, ***Maarit Karppinen,*** Aalto University, Finland	**Functional Thin Films and Surfaces** **Session C3-2-ThA** **Thin Films for Energy Storage and Conversion II** **Moderators:** **Clio Azina**, RWTH Aachen University, Germany, **Tushar Shimpi**, Colorado State University, USA
3:20pm		
3:40pm	**C3-2-ThA-8** Transparent Niobium-Doped Titanium Dioxide Thin Films With High Seebeck Coefficient for Thermoelectric Applications, ***Joana Ribeiro,*** *F. Correia, F. Rodrigues,* University of Minho, Portugal*; S. Reparaz, A. Goni,* Institut de Ciència de Materials de Barcelona-CSIC, Spain*; C. Tavares,* University of Minho, Portugal	
4:00pm	**C3-2-ThA-9** X-Ray Absorption Spectroscopy Study of Local Order in Transparent Thermoelectric Thin Films of Doped ZnO, *F. Correia, J. Ribeiro, F. Barbosa, M. Andritschky,* Centre of Physics of the Universities of Minho and Porto (CF-UM-UP), University of Minho, Portugal*; A. Kuzmin, I. Pudza,* Institute of Solid State Physics, University of Latvia*; A. Kalinko,* Deutsches Elektronen-Synchrotron − A Research Centre of the Helmholtz Association, Gibraltar*; E. Welter,* Deutsches Elektronen-Synchrotron − A Research Centre of the Helmholtz Association, Germany*; A. Mendes,* LEPABE, Faculty of Engineering of the University of Porto, Portugal*; A. LaGrow,* International Iberian Nanotechnology Laboratory (INL), Portugal*; O. Bondarchukat,* International Iberian Nanotechnology Laboratory (INL) , Portugal*; N. Sadrine, R. Correia, T. Monteiro,* i3N, Departamento de Física, Universidade de Aveiro, Portugal*;* ***Carlos J. Tavares,*** Centre of Physics of the Universities of Minho and Porto (CF-UM-UP), University of Minho, Portugal	

Thursday Afternoon, May 26, 2022

	Room Town & Country D	
1:20pm	**INVITED: B8-2-ThA-1** Diagnosing Bipolar HiPIMS Plasmas Using Laser Thomson Scattering (Virtual Presentation), ***James Bradley****, M. Law,* University of Liverpool, UK	**Hard Coatings and Vapor Deposition Technologies** **Session B8-2-ThA** **HiPIMS, Pulsed Plasmas and Energetic Deposition II** **Moderator:** **Martin Rudolph**, Leibniz Inst. of Surface Eng. (IOM), Germany
1:40pm		
2:00pm	**B8-2-ThA-3** Time Resolved IEDF, EEDF and Q/M of a HiPIMS Discharge for Different Pulse Conditions, Pressures, and Probe Orientations*, Z. Jeckell,* University of Illinois at Urbana Champaign, USA*; D. Barlaz,* University of Illinois Urbana Champaign, USA*; W. Huber, T. Houlahan, I. Haehnlein,* Starfire Industries, USA*;* ***Brian Jurczyk****,* Starfire Industries LLC, USA*; D. Ruzic,* University of Illinois Urbana Champaign, USA	
2:20pm	**B8-2-ThA-4** Metal-Ion Synchronized Reactive HiPIMS of AlScN for Piezoelectric Applications*,* ***Jyotish Patidar****, K. Thorwarth, T. Amelal, S. Zhuk, S. Siol,* Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland	
2:40pm	**B8-2-ThA-5** Selective Metal Ion Irradiation Using Bipolar HiPIMS: A New Route to Tailor Film Nanostructure and the Resulting Mechanical Properties*,* ***Ivan Fernandez****,* NANO4ENERGY SLNE, Spain	
3:00pm	**B8-2-ThA-6** Ion Beam Sputter Deposition of Gallium Oxide Thin Films*, D. Kalanov, Y. Unutulmazsoy,* ***André Anders****, C. Bundesmann,* Leibniz Institute of Surface Engineering (IOM), Germany	
3:20pm	**INVITED: B8-2-ThA-7** The Promise of Data-Driven Methods for Diagnostics and Control of Plasma Interactions with Surfaces*,* ***Ali Mesbah****,* University of California Berkeley, USA	
3:40pm		
4:00pm	**B8-2-ThA-9** Colored Random Noise of Cathodic Arcs: What Is It? Should We Care?*,* ***Andre Anders****, K. Oh, D. Kalanov,* Leibniz Institute of Surface Engineering (IOM), Germany	

Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes
Room Golden State Ballroom - Session HP-ThP
Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes (Symposium H) Poster Session - 5:00pm – 7:00 pm

HP-ThP-1 e-Poster Presentation: Strategies for Increasing the Fracture Toughness of Hard Coatings Using CrN as a Role Model, ***Rainer Hahn**, S. Rosenecker, D. Forstner,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien, Austria*; T. Wojcik,* Institute of Materials Science and Technology, TU Wien, Austria*; O. Hunold,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein*; S. Kolozsvári,* Plansee Composite Materials GmbH, Germany*; P. Mayrhofer,* Institute of Materials Science and Technology, TU Wien, Austria*; H. Riedl,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien, Austria

HP-ThP-2 Insights on Fracture and Fatigue Mechanisms of Hard Protective Coatings, ***Lukas Zauner**, R. Hahn,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien, Austria*; O. Hunold,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein*; P. Polcik,* Plansee Composite Materials GmbH, Germany*; H. Riedl,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien, Austria

HP-ThP-5 Acoustic Monitoring of Nanoindentation Induced Nanofatigue, ***Jurgis Daugela**,* Johns Hopkins University, USA*; A. Daugela,* Nanometronix LLC, USA

HP-ThP-6 Spotting the CSM Plasticity Error during Nanoindentation with Continuous Stiffness Measurements, *B. Merle,* Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany*; **Hendrik Holz**,* University of Erlangen-Nuremberg (FAU), Germany

HP-ThP-7 Advanced Characterisation in Amorphous Thin Films for Biomedical Applications, *M. Sebastiani, **Edoardo M. Rossi**,* Università degli studi Roma Tre, Italy

HP-ThP-8 Capabilities of Time-of-Flight Low-Energy Ion Scattering Demonstrated on the Example of Surface Oxidation of Ti and Ti-Based Hard Coatings, ***Philipp M. Wolf**,* Department of Physics and Astronomy, Uppsala University, Sweden*; D. Neuß,* Materials Chemistry, RWTH Aachen University, Germany*; T. Tran,* Department of Physics and Astronomy, Uppsala University, Sweden*; M. Hans, J. Schneider,* Materials Chemistry, RWTH Aachen University, Germany*; D. Primetzhofer,* Department of Physics and Astronomy, Uppsala University, Sweden

Coatings for Biomedical and Healthcare Applications
Room Golden State Ballroom - Session DP-ThP
Coatings for Biomedical and Healthcare Applications (Symposium D) Poster Session- 5:00pm – 7:00 pm

DP-ThP-3 Antimicrobial and Aging Properties of Ag-, Ag/Cu- and Ag Cluster-Doped Amorphous Carbon Coatings Produced by Magnetron Sputtering for Aerospace Application, *G. Sanzone, J. Yin, **Hailin Sun**,* Teer Coatings Ltd, UK

DP-ThP-4 Structure and Mechanical Properties of Superelastic TiZrNb and TiSnZrNb Coatings for Biomedical Applications, *T. Choquet, A. Fillon,* Institut des Sciences Chimiques de Rennes, France*; A. Michel,* Institut Pprime - CNRS - ENSMA - Université de Poitiers, France*; M. Vayssade,* Université de technologie de Compiègne, France*; T. Gloriant,* Institut des Sciences Chimiques de Rennes, France*; **Gregory Abadias**,* Institut Pprime - CNRS - ENSMA - Université de Poitiers, France

DP-ThP-5 Development of Multilayer Hydroxyapatite (HA) - Silicon (Si) Coatings Deposited on Ti6Al4V by Magnetron Sputtering with Potential Biomedical Application, ***Julián Andrés Lenis Rodas**, K. Perez Zapata, F. Bolívar Osorio,* University of Antioquia, Colombia*; P. Rico, J. Gómez Ribelles,* University of Valencia, Spain

DP-ThP-6 Effective Antiviral Copper Coatings onto Thermoplastic Against SARS-CoV-2, *C. Popescu,* IRCER, France*; M. Courant,* CHU Limoges, France*; E. Laborde,* IRCER, France*; S. Alain,* CHU Limoges, France*; V. Perin,* Kometa Technologies, France*; A. Castro,* CITRA, France*; L. Youssef,* IRCER, France*; T. Maerten,* Oerlikon-Balzers, France*; **Marjorie Cavarroc**,* Safran, France*; D. Alain, A. Vardelle,* IRCER, France

DP-ThP-7 Antibacterial Graphene Coatings Electrophoretically Deposited on Nitinol Substrate, ***Madhusmita Mallick**, K. Mitra, A. N,* Indian Institute of Technology (IIT) Madras, India

Coatings for Use at High Temperatures
Room Golden State Ballroom - Session AP-ThP
Coatings for Use at High Temperatures (Symposium A) Poster Session - 5:00pm – 7:00 pm

AP-ThP-2 Corrosion Induced Diffusion Pathways in Pvd $Al_{1-x}Cr_xN$ Coatings Investigated by Atom Probe Tomography, ***Oliver Ernst Hudak**,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien, Austria*; T. Wojcik,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien , Austria*; V. Dalbauer,* Department of Materials Science, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany*; L. Shang, M. Arndt, O. Hunold,* Oerlikon Balzers, Oerlikon Surface Solutions AG, 9496 Balzers, Liechtenstein*; P. Polcik,* Plansee Composite Materials GmbH, D-86983 Lechbruck am See, Germany*; P. Felfer,* Department of Materials Science, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany*; H. Riedl,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien, Austria

AP-ThP-8 Microstructure and Oxidation Behaviour of $MoSi_2$ Thin Films Grown by DCMS and HiPIMS, ***Ahmed Bahr**, S. Richter, T. Wojcik,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien , Austria*; J. Ramm, O. Hunold,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein*; S. Kolozsvári,* Plansee Composite Materials GmbH , Germany*; H. Riedl,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien , Austria

Functional Thin Films and Surfaces
Room Golden State Ballroom - Session CP
Functional Thin Films and Surfaces (Symposium C) Poster Session - 5:00pm – 7:00 pm

CP-1 Cross-Linking Processes in Antimicrobial UV-Sol-Gel and Thermal-Sol-Gel Systems Initiated by Atmospheric Pressure Plasma Characterized by FTIR, ***Simon Chwatal**, J. Lackner, W. Waldhauser,* Joanneum Research Forschungsgesellschaft GmbH, Austria*; M. Stummer,* INOCON Technologie GmbH, Austria*; H. Steiner,* Aerospace & Advanced Composites GmbH, Austria*; A. Coclite,* Graz University of Technology, Austria

CP-2 Crystallization and Vitrification Kinetics by Design: The Role of Chemical Bonding, ***Matthias Wuttig**,* RWTH Aachen University, Germany

CP-3 Theoretical and Experimental Study to Simplify AgZn Alloy IR Refractive Index Calculation, ***Daniel Lin**, T. Ding, G. Ding,* Labforinvention, USA

CP-6 Sputter Deposited Advanced Anode Functional Layers for Solid Oxide Fuel Cells, *K. Steier, **Justyna Kulczyk-Malecka**, P. Kelly,* Manchester Metropolitan University, UK

CP-8 Unraveling the Bisignate and Broadband Chiroptical Response from All-Dielectric Distorted L-Shape Metamaterials, ***Ufuk Kilic**, M. Hilfiker, S. Wimer, A. Ruder, E. Schubert, C. Aryropoulos, M. Schubert,* University of Nebraska-Lincoln, USA

CP-10 Microstructured Electrodeposition of Copper Templated by Photo-Induced Monolayer Patterning, ***David Sconyers**, C. Longo, J. Maurer,* US Army DEVCOM AC, Benet Laboratories, USA

CP-12 Ag Segregation in Co-sputtered ZrCuAlNi:Ag Thin Films, *M. Steinhoff, D. Holzapfel, S. Karimi Aghda, D. Neuß, P. Pöllmann, M. Hans,* RWTH Aachen University, Germany*; D. Primetzhofer,* Uppsala University, Sweden*; J. Schneider, **Clio Azina**,* RWTH Aachen University, Germany

Hard Coatings and Vapor Deposition Technologies
Room Golden State Ballroom - Session BP-ThP
Hard Coatings and Vapor Deposition Technologies (Symposium B) Poster Session - 5:00pm – 7:00 pm

BP-ThP-1 Influence of Various Tool Steels and Cemented Carbide on Growth of PVD Hard Coatings, *K. Bobzin, C. Kalscheuer, **Marco Carlet**, D. Hoffmann,* RWTH Aachen University, Germany

BP-ThP-2 Influence of Deposition Parameters on Chemistry, Structure and Mechanical Properties of Vanadium Carbide Thin Films, ***Barbara Schmid**, N. Koutná,* TU Wien, Institute of Materials Science and Technology, Austria*; E. Halwax,* TU Wien, Austria*; P. Mayrhofer,* TU Wien, Institute of Materials Science and Technology, Austria

BP-ThP-3 Influence of High-Power Pulse Magnetron Sputtering Tantalum Nitride Film Characteristics and Protection Behavior, ***Yung-Chi Chang**, S. Hsu, C. Tu, D. Hong, F. Wu,* National United University, Taiwan

BP-ThP-5 Rotating Spokes in Reactive HiPIMS Process Measured by Spatially Resolved OES, ***Marta Šlapanská***, *M. Kroker, J. Hnilica, P. Klein, P. Vašina,* Masaryk University, Czechia

BP-ThP-6 Sputtered Amorphous Carbon Interlayers for Homogeneous Lithium Plating and Stripping in Solid-State Batteries, *T. Amelal, M. Futscher, J. Patidar, A. Müller, A. Aribia, Y. Romanyuk,* ***Sebastian Siol***, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland

BP-ThP-9 e-Poster Presentation: Effect of Precursor Interactions on Film Growth Rate and Properties in Chemical Vapor Deposition of $Hf_{1-x}Al_xB_2$ Alloy Films, ***Kinsey Canova***, *S. Shrivastav, C. Romnes, D. Yun, J. Krogstad, J. Abelson,* University of Illinois at Urbana-Champaign, USA

BP-ThP-13 Biocompatibility Evaluation of nc-TiC/a-C:H Nanocomposite Diamond-like Carbon Coatings: Effect of Carbon Content, *B. Lou,* Chang Gung University, Taiwan; *Y. Hsiao, L. Chang,* Ming Chi University of Technology, Taiwan; *M. Ger,* National Defense University, Taiwan; ***Jyh-Wei Lee,*** Ming Chi University of Technology, Taiwan

BP-ThP-14 TiN/TaN Superlattice Films Improved by Interfacial Dopings, ***Zecui Gao***, *N. Koutná, J. Buchinger, T. Wojcika, P. Mayrhofer,* TU Wien, Institute of Materials Science and Technology, Austria

BP-ThP-16 Fifty Shades of TiN: How Deposition Conditions Influence the Growth Morphology and Thereby Hardness and Especially Fracture Toughness, ***Paul Mayrhofer***, *R. Hahn, B. Hajas, A. Kirnbauer,* TU Wien, Austria

New Horizons in Coatings and Thin Films
Room Golden State Ballroom - Session FP-ThP
New Horizons in Coatings and Thin Films (Symposium F) Poster Session - 5:00pm – 7:00 pm

FP-ThP-1 Analysis of (Al,Cr,Nb,Ta,Ti)-Nitride and Oxynitride Diffusion Barriers in Cu-Si Interconnects by 3D-Secondary Ion Mass Spectrometry, ***Andreas Kretschmer,*** TU Wien, Institute of Materials Science and Technology, Austria; *F. Bohrn, H. Hutter,* TU Wien, Institute of Chemical Technologies and Analytics, Austria; *E. Pitthan, D. Primetzhofer,* Uppsala University, Department of Physics and Astronomy, Sweden; *P. Mayrhofer,* TU Wien, Institute of Materials Science and Technology, Austria

FP-ThP-2 Maximum Achievable N Content in Amorphous Nitrides, ***Jiri Houska,*** University of West Bohemia, Czechia

FP-ThP-3 Bulk Diffusion of Impurities in TiN: An Ab Initio Study, ***Ganesh Kumar Nayak,*** Montanuniversität Leoben, Austria; *M. Popov,* Material Center Leoben, Austria; *D. Holec,* Montanuniversität Leoben, Austria

FP-ThP-5 Data-Driven Design Guidelines for Ceramic Superlattices With Enhanced Fracture Resistance, ***Nikola Koutná***, *A. Brenner,* TU Wien, Austria; *D. Holec,* Montanuniversitat Leoben, Austria; *P. Mayrhofer,* TU Wien, Austria

FP-ThP-6 Preparation of Single and Multilayer Films of Boron Carbide, Titanium Diboride and Hexagonal Boron Nitride Using Pulsed Laser Deposition, ***Falko Jahn***, *S. Weißmantel,* Laserinstitut Hochschule Mittweida, Germany

FP-ThP-7 Anisotropic Super-hardness of Hexagonal WB_{2-z} Thin Films, ***Christoph Fuger***, *R. Hahn, L. Zauner, T. Wojcik,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien , Austria; *M. Weiss, A. Limbeck,* Institute of Chemical Technologies and Analytics, TU Wien, Austria; *O. Hunold,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; *P. Polcik,* Plansee Composite Materials GmbH, Germany; *H. Riedl,* Christian Doppler Laboratory for Surface Engineering of high-performance Components, TU Wien , Austria

FP-ThP-10 Characterization of a Novel Ionic Liquid-Based Chromium Plating Formulation, ***Cameron Longo***, *D. Sconyers,* US Army - DEVCOM AC - Benet Laboratories, USA; *M. Quiroz-Guzman, D. Morrison, T. Bush, M. Arsenault,* Trion Coatings, LLC, USA; *J. Maurer,* US Army - DEVCOM AC - Benet Laboratories, USA

Surface Engineering - Applied Research and Industrial Applications
Room Golden State Ballroom - Session GP-ThP
Surface Engineering - Applied Research and Industrial Applications (Symposium G) Poster Session – 5:00pm – 7:00 pm

GP-ThP-1 Water and Oil Repellent Coating on Fabric Using Hollow Cathode PECVD, *R. Mbamkeu Chakounte,* Univ Appl Sci & Arts (HAWK), Göttingen, Germany; *J. Jolibois,* AGC Interpane, Germany; *O. Kappertz,* Univ Appl Sci & Arts, (HAWK), Göttingen, Germany; ***John Chambers,*** AGC Plasma Technology Solutions, USA; *H. Weis,* AGC Interpane, Germany; *H. Wiame,* AGC Plasma Technology Solutions, Belgium; *W. Viöl,* Univ Appl Sci & Arts (HAWK), Göttingen, Germany

GP-ThP-2 Modification of Polymer 3d Printed Parts Through Vacuum Metallization, ***Andrew Miceli***, *G. Bevill, S. Stagon,* University of North Florida, USA

GP-ThP-8 Reactive HiPIMS Deposition of AlO_x Interlayer for Pt Thermistors on SiN_x, ***Atasi Dan***, *E. Antunes, C. Yung, N. Tomlin, M. Stephens,* Applied Physics Division, National Institute of Standards and Technology (NIST), Boulder, USA; *J. Lehman,* Applied Physics Division, National Institute of Standards and Technology (NIST), USA

GP-ThP-9 Synthesis of Large Area ta-C Coating by Single-bend FCVA Source Using in-line PVD System, ***HoeKun Kim***, *K. Lee, S. Lee,* Korea Aerospace University, Korea (Republic of); *J. Kim,* University of Incheon, Korea (Republic of)

Topical Symposia
Room Golden State Ballroom - Session TS1P-ThP
Anti- and De-Icing Surface Engineering - TS1 Poster Session - 5:00pm – 7:00 pm

TS1P-ThP-1 A Fracture Mechanics Approach to Ice-Shedding Surfaces, ***Michael Wood***, *P. Servio, A. Kietzig,* McGill University, Dept. Chemical Engineering, Canada

Topical Symposia
Room Golden State Ballroom - Session TS3P-ThP
Electrochemical Cells – Hydrogen and Batteries - TS3 Poster Session - 5:00pm – 7:00 pm

TS3P-ThP-1 Ionic Conductive Polymer Electrolyte for High-Performance Flexible Solid-State Supercapacitors, ***Haylay Ghidey Redda***, *W. Su, R. Chen, B. Hwang,* National Taiwan University of Science and Technology, Taiwan

Tribology and Mechanical Behavior of Coatings and Engineered Surfaces
Room Golden State Ballroom - Session EP-ThP
Tribology and Mechanical Behavior of Coatings and Engineered Surfaces (Symposium E) Poster Session - 5:00pm – 7:00 pm

EP-ThP-2 Atmospheric Pressure Plasma Deposition of Low Friction Coatings on Engineering Thermoplastics: The Plasma-Process-Structure in the Versatile Spray Coating Technique as Basis of Commercial Applications, ***Dietmar Kopp***, *J. Lackner, R. Kaindl, W. Waldhauser,* Joanneum Research Forschungsgesellschaft GmbH, Austria; *M. Stummer,* INOCON, Austria; *A. Coclite,* Graz University of Technology, Austria

EP-ThP-3 The Influence of Boron in Thick AlTiN and AlCrN Coatings Deposited by Bipolar HiPIMS to Control Residual Stress and Improve Tribomechanical Properties, ***Adrián Claver,*** Institute for Advanced Materials and Mathematics (INAMAT2), Universidad Pública de Navarra (UPNA), Spain; *I. Fernandez,* Nano4Energy SL, Spain; *J. Endrino,* Nano4Energy SL, University Loyola, Sevilla (Spain), Spain; *J. Santiago ,* Nano4Energy SL, Spain; *J. Fernández Palacio,* Centre of Advanced Surface Engineering, AIN, Spain; *J. García,* Institute for Advanced Materials and Mathematics (INAMAT2), Universidad Pública de Navarra (UPNA), Spain

EP-ThP-5 Optimized a-SiC_x:H Intermediate Layers for Well-adhered a-C:H Thin Films on Ferrous Alloys, *V. Piroli, J. Weber, M. Goldbeck,* UCS, Brazil; *F. Cemin,* UNICAMP, Brazil; *A. Michels,* UCS, Brazil; *F. Alvarez,* UNICAMP, Brazil; ***Carlos Figueroa***, UCS, Brazil

EP-ThP-6 A Deep Neural Network for Pattern Optimization of Microtextured Surfaces in Lubricated Contacts, *A. Silva,* ***Veniero Lenzi***, *L. Marques,* University of Minho, Portugal

EP-ThP-7 e-Poster Presentation: Tribological Behavior of Lamellar Solid Lubricant Coatings in Low Viscosity Hydrocarbons, ***Euan Cairns***, *A. Ayyagari,* University of North Texas, USA; *S. Berkebile,* US DEVCOM Army Research laboratory, USA; *D. Berman, S. Aouadi, A. Voevodin,* University of North Texas, USA

EP-ThP-10 Mechanical Behaviour and Effects of Cu/Ni Nanolaminate Coatings on the Fatigue Properties of Welded Steel Specimen, ***Jakob Brunow***, *M. Rutner,* Hamburg University of Technology, Institute for Metal and Composite Structures, Germany

EP-ThP-11 Nanoindentation Spectrometry, ***Esteban Broitman***, SKF B.V., Netherlands

	Room Town & Country B	
8:00am	**INVITED: TS1-FrM-1** Penguin-Inspired Anti-Icing Surfaces, ***Anne Kietzig***, *M. Wood,* McGill University, Canada	**Topical Symposia** **Session TS1-FrM** **Anti- and De-Icing Surface Engineering** **Moderators:** **Kevin Golovin**, University of Toronto, Canada, **Jolanta-Ewa Klemberg-Sapieha**, École Polytechnique de Montréal, Canada
8:20am		
8:40am	**TS1-FrM-3** Screening of Anti-Icing Strategies Against Aeronautic Secondary Icing, ***Paloma García***, *J. Mora, F. Carreño, M. González, A. Agüero Bruna,* Instituto Nacional de Técnica Aeroespacial (INTA), Spain	
9:00am	**TS1-FrM-4** Influence of Organosilicon Based Modification on Ice Adhesion and Wettability of Unsaturated Polyester Gelcoats Surfaces, ***Rafal Kozera***, *B. Przybyszewski, K. Zolynska,* Warsaw University of Technology, Materials Science and Engineering, Poland; *B. Sztorch, R. Przekop,* Adam Mickiewicz University of Poznan, Poland; *A. Boczkowska,* Warsaw University of Technology, Materials Science and Engineering, Poland	
9:20am	**TS1-FrM-5** Quasicrystalline Coatings Exhibit Durable Low Interfacial Toughness with Ice, ***Kevin Golovin***, University of Toronto, Canada	

Friday Morning, May 27, 2022

	Room Town & Country C	
8:00am	**INVITED: F3-FrM-1** Tackling Scalability in the Synthesis of Two Dimensional Chalcogenide Semiconductors and their Heterostructures, ***Nicholas Glavin,*** Air Force Research Laboratory, USA	**New Horizons in Coatings and Thin Films** **Session F3-FrM** **2D Materials: Synthesis, Characterization, and Applications** **Moderator:** **Suneel Kodambaka**, University of California Los Angeles, USA
8:20am		
8:40am	**F3-FrM-3** 2D Nanosheets Exfoliation and Functionalization from Hexagonal Boron Nitride in Aqueous Phase for Ultrafast Solvent Transport of Molecular Solute Screening Film, ***Degu Lere Keshebo,*** *C. HU, J. Lai,* National Taiwan University of Science and Technology, Taiwan	
9:00am	**INVITED: C4-FrM-4** Shedding Light on Implant Biointerfaces: Designing Innovative Photocatalytic Coatings Towards Cell-Assisting and Bacteria-Killing Functions on Titanium, ***Valentim Barão,*** *B. Nagay, C. Dini, H. Pantaroto,* University of Campinas (UNICAMP), Brazil	**Functional Thin Films and Surfaces** **Session C4-FrM** **Photo- and Electrochemically Active Surfaces** **Moderators:** **Peter Kelly**, Manchester Metropolitan University, UK, **Carlos Tavares**, University of Minho, Portugal
9:20am		
9:40am	**INVITED: C4-FrM-6** Hematite and Titania Thin Films: Energy and Environmental Applications (Virtual Presentation), ***Josef Krysa,*** University of Chemistry and Technology, Czechia	
10:00am		
10:20am	**C4-FrM-8** Multifunctional Coatings for Maritime Applications, ***José Castro,*** University of Coimbra, Colombia; *M. Lima, I. Carvalho, M. Henriques,* University of Minho, Portugal; *S. Carvalho,* University of Coimbra, Portugal	

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